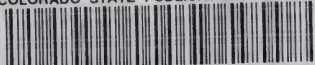


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STATE OF COLORADO
BUREAU OF MINES

State Capitol, Denver

HORACE F. LUNT, Commissioner of Mines

ANNUAL REPORT FOR
THE YEAR
1922



DENVER, COLORADO
EAMES BROTHERS, PRINTERS
1923

STATE OF COLORADO
BUREAU OF MINES
State Capitol, Denver
HORACE F. LUNT, Commissioner of Mines

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ANNUAL REPORT FOR
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LETTER OF TRANSMITTAL

To His Excellency,

THE HONORABLE WILLIAM E. SWEET,
Governor of Colorado.

Sir: In compliance with Section 3392 of the Compiled Laws of Colorado, 1921, I have the honor to transmit herewith the Annual Report of the State Bureau of Mines for the year 1922, including the Financial Report for the biennial period 1921-1922.

Respectfully submitted,

HORACE F. LUNT,
Commissioner of Mines.

State Capitol,
Denver, Colorado,
April 15, 1923.

PERSONNEL OF THE BUREAU OF MINES OF THE STATE OF COLORADO

HORACE F. LUNT, Commissioner of Mines.....	Denver
T. R. HENAHEN, Inspector, District No. 1.....	Denver
M. J. McCARTHY, Inspector, District No. 2.....	Cripple Creek
R. J. MURRAY, Inspector, District No. 3.....	Salida
ROBERT INNES, Inspector, District No. 4.....	Montrose
MISS ETHEL M. FLANDERS, Chief Clerk.....	Denver
MRS. A. M. NICKERSON, Stenographer.....	Denver

DISTRICTS OF INSPECTION

DISTRICT No. 1.—Moffat, Routt, Jackson, Grand, Larimer, Boulder, Gilpin, Clear Creek, Jefferson, Denver, Weld, Adams, Arapahoe, Morgan, Logan, Sedgwick, Phillips, Washington and Yuma Counties.

DISTRICT No. 2.—Douglas¹, Elbert, Teller, El Paso, Fremont, Custer, Huerfano, Las Animas, Pueblo, Lincoln, Kit Carson, Cheyenne, Kiowa, Crowley, Otero, Bent, Prowers and Baca Counties.

DISTRICT No. 3.—Rio Blanco, Garfield, Mesa², Delta, Eagle, Summit, Pitkin, Lake, Park and Chaffee Counties.

DISTRICT No. 4.—Montrose, San Miguel, Dolores, Montezuma, Ouray, San Juan, La Plata, Gunnison³, Hinsdale, Saguache³, Mineral³, Rio Grande, Alamosa, Archuleta, Conejos and Costilla Counties.

¹The northern part of Douglas County has been temporarily transferred to District No. 1.

²The southwestern part of Mesa County has been temporarily transferred to District No. 4.

³That part of Saguache County lying east of the Continental Divide, the northern part of Gunnison County and Mineral County have been temporarily transferred to District No. 3.

FINANCIAL STATEMENT

1921-1922

RECEIPTS

Appropriation for the fiscal years 1921-1922—

Salary, Commissioner	\$ 6,000.00	
Salaries, Inspectors	14,400.00	
Salary, Clerk and Assistant Curator.....	3,000.00	
Salary, Stenographer and Assistant Clerk.....	2,400.00	
	<hr/>	\$25,800.00
Traveling Expenses, Commissioner.....	\$ 3,200.00	
Traveling Expenses, Inspectors.....	14,400.00	
	<hr/>	\$17,600.00
Incidental Fund	\$ 2,500.00	2,500.00
		<hr/>
		\$45,900.00

DISBURSEMENTS

Salaries—

Commissioner	\$ 6,000.00	
Inspector, District No. 1.....	3,600.00	
Inspector, District No. 2.....	3,600.00	
Inspector, District No. 3.....	3,600.00	
Inspector, District No. 4.....	3,600.00	
Clerk and Assistant Curator.....	3,000.00	
Stenographer and Assistant Clerk.....	2,400.00	
	<hr/>	\$25,800.00

Traveling Expenses—

Commissioner	\$ 3,114.55	
Inspectors	12,369.70	
Unexpended Balance	2,115.75	
	<hr/>	\$17,600.00
Incidental Expenses	\$ 1,503.16	
Unexpended Balance	996.84	
	<hr/>	2,500.00
		<hr/>
		\$45,900.00

INTRODUCTION

The activities of the Bureau of Mines during 1922 were confined to the usual routine, no funds for any special work being provided.

The four inspectors visited practically all of the operating metal mines, quarries, mills and smelters at least once during the year. Most of the larger operations were inspected more than once. The object of these inspections is to eliminate, as far as possible, unsafe conditions and practices. In general, this work meets with the lively co-operation of the mine operators.

The Commissioner and Inspectors are anxious to help the mining industry in every legitimate manner and wish to be called upon whenever their services can be used.

Inquiries regarding the mines and mineral resources of the state and questions regarding the demand and market for less common mineral products are constantly coming into the Bureau. An earnest endeavor is made to furnish the information desired. Helpful co-operation is often received from the Colorado Geological Survey, the United States Bureau of Mines and the United States Geological Survey.

On account of lack of funds it has been impossible to give the State Mineral Collection the attention it deserves. During the past year a few new specimens have been received.

The Commissioner takes this opportunity of expressing his appreciation of the loyal and efficient services that have been rendered by the entire personnel of the Bureau during his term of office and to bespeak the same hearty co-operation for his successor.

METAL MINING IN 1922

GENERAL CONDITIONS

The metal mining industry of Colorado is now in a better condition than it has been at any time since the war and is improving right along. During the latter part of 1920 and the early months of 1921 it was more depressed than it had been since 1893. This depression was due to the rapid fall in the prices of lead and zinc added to the war-time costs which had not at that time begun to decrease. Practically all the mines which were worked primarily for zinc had closed and only those lead mines which had unusually rich ores, or those containing considerable quantities of silver and gold continued to operate. The gold mines were still struggling against the adverse conditions brought about by the decreased purchasing power of their product. The end of 1921 was marked by a distinct, though slight, improvement in most of the metal mining districts. Reduction in wage scales and the decreasing cost of supplies, together with small advances in the prices of the base metals, had a favorable effect. The improvement was rather slow until the latter part of 1922 when the marked increases in the prices of lead and zinc gave reason for belief in a steady and favorable ore market.

The slight increases shown in the production statistics, given elsewhere in this report, by no means indicate the greatly increased activity which is still continuing. The rehabilitation of mines which have been shut down takes time and the full effects of resumption have not yet been reflected in the production.

REVIEW OF THE PRINCIPAL MINING DISTRICTS

On account of the closing of the smelters at Denver and Pueblo, the ores from the three northern mining counties, Gilpin, Clear Creek and Boulder, have had to stand the comparatively high freight rate to Leadville. There are schemes on foot which may result in the erection of an electric smelter near Denver to treat the ores which are too low grade to be profitably mined under present conditions. As it is, there has been less activity in these counties than elsewhere in the state.

The only large new operation is that of the East Butte Copper Mining Company. This well-known Butte company, early last year, took over the Dives-Pelican and other old-time producers at Silver Plume, Clear Creek county. One of the old mills was rebuilt as a modern 500-ton flotation plant which has been treating dumps and stope fillings with satisfactory results. Underground development work is also in progress. The Wasatch-Colorado Company, also at Silver Plume, like other zinc producers, has resumed operations.

A great many small operations have been commenced throughout the northern counties, many of them in districts, such as Perigo in the northwestern part of Gilpin county, where there had been no work done for several years. While none of these operations is large, many of them are producing and, in the aggregate, adding appreciably to the total production. Tungsten mining in Boulder county, which has been at a standstill since the Armistice, is beginning again.

In Summit county the Wellington, one of the largest zinc mines of the state, has resumed operations after being shut down for nearly two years. Successful operations have also been carried on in a number of smaller properties which produce gold and silver. The dredges of the Tonopah Placers Company and the Blue River Placer Mining Company have been in steady operation. The old French Gulch dredge, which had been idle for some time, was started again by the Florence Dredging Company. Some small hydraulic mining operations are also in progress. Very little work has been done in the Frisco and Kokomo districts. The Michigan, near Kokomo, a producer of pyritic silver ore, has been the only mine in constant operation.

The London Mine in Park county has continued to produce a small tonnage of high-grade gold ore. The Hilltop has been operated intermittently for its lead ores. The South Park Dredging Company completed a dredge in the valley of the Platte river near Fairplay and started digging last June. The erection of two larger dredges to handle the deeper gravels on each side of the river channel is contemplated.

There has been a decided increase in activity around Leadville and elsewhere in Lake county. The Down Town Mines Company is doing extensive development work. A tunnel is being driven into Canterbury Hill to explore new territory and to unwater the Fryer Hill basin. The South Ibex Mining Company is exploring ground southwest of the Little Jonny and the Garbutt. Many other prospecting operations are in progress near Leadville and also in the St. Kevin and Sugar Loaf districts.

The Rawley Mine at Bonanza, Saguache county, has been financed by a combination of the Bulkeley Wells interests, the American Smelting and Refining Company and the old Rawley Mining Company. A 300-ton concentrating mill and a $7\frac{1}{2}$ -mile aerial tramway are under construction and will be completed about May 1st. The Orient iron mine near Villa Grove, which has been operated intermittently by lessees for many years, is now being systematically developed by the Colorado Fuel & Iron Company.

Some new discoveries of silver ore near Aspen, Pitkin county, have been made, but lack of capital has hindered their development as yet.

A large tonnage of pyritic silver-copper ore has been shipped from the Eagle Mine at Gilman, Eagle county, and it is reported that zinc ores are now also being produced.

In the San Juan country the greatest activity was at Telluride, San Miguel county, where the Smuggler-Union and the Tomboy were responsible for the greater part of the production. The Black Bear will soon start producing on a large scale. There was very little work done in San Juan county until late in the autumn when operations were resumed on a number of properties, notably the Sunnyside. In Ouray county the Atlas and the Mountain Top were the chief producers. The underground development at the former was great enough to warrant doubling the capacity of the mill, the new units of which have lately been placed in successful operation. Very little work was done in Mineral and Hinsdale counties, but some encouraging discoveries of high grade silver ore have been made; notably in the Bachelor at Creede and the Belle of the West and Ute at Lake City.

The Cripple Creek District, Teller county, has scarcely recovered from the war-time depression, but is now in better condition than it has been. A fine body of high-grade ore on the 2,600-foot level of the Portland, the deepest working in the district, has been developed for a length of 1,000 feet and further sinking is now in progress. The Independence mill of the Portland Company was closed in July after an unsuccessful trial on a large tonnage of stope fillings mixed with medium-grade ores. In October it was re-opened to treat a reduced tonnage of ore-house rejects and low-grade ore which is being done successfully. The Cresson has been a steady producer of a large tonnage of medium-grade ore. New hoisting equipment is being erected preparatory to sinking. The El Paso Mine is being re-opened. The Ajax was taken over by a subsidiary of the Tonopah Mining Company of Nevada which has repaired the surface plant and is prosecuting extensive development work.

SMELTING

Since June, 1921, the only operating lead smelters have been those at Leadville and Durango. Until recently there were only two or three furnaces operated at the Arkansas Valley Plant and one at the Durango Plant. Now there are four at the Arkansas Valley and two at Durango.

The Smelting Company, in co-operation with the Bulkeley Wells interests, is now erecting a sulphating plant at Durango to treat the complex concentrates from the Black Bear Mine at Telluride by what is commonly called the Coolbaugh process. This will remove the zinc and copper, leaving a lead residue which can be treated in the blast furnace. There is every reason to believe that this plant will be successful and that it will be

enlarged to treat the ore from other mines. This will render available large tonnages of zincy ores that heretofore could not be mined and treated profitably.

During the past year several zinc oxide plants, which had been shut down for a year or two were started up. These are the Western Zinc Concentrating Company at Leadville, the Empire Zinc Company at Canon City, the River Smelting and Refining Company at Florence and the United States Zinc Company at Pueblo.

MINOR METALS

There has been little or no production of manganese, tungsten, molybdenum, vanadium, uranium and radium in recent years. The new tariff has stimulated interest in manganese and tungsten and production will probably be re-commenced before the end of 1923. It is also possible that the large molybdenum mine at Climax will be re-opened in the near future. The shipment of large quantities of pitchblende ores from the Belgian Congo has put the Colorado carnotite mines out of business. Radium can be made from the African ores to sell at \$75,000 a gram, while that from carnotite must be sold at about \$125,000 a gram to be profitable. How long the African ores will last has not been determined. The roscoelite ores of vanadium, which occur in southwestern Colorado, are too low-grade to compete with the imported ores of higher grade, consequently there does not appear to be much chance of any of the vanadium mines being re-opened in the near future. A discovery of vanadium ore in Garfield county, near Rifle, has recently been reported.

Arsenic, cadmium and thallium are refined at the old Globe Smelter, in Denver, from flue dust from other smelters. Much of this material is, however, from other states.

NON-METALLIC MINERALS

The Yule marble quarries, in the northern part of Gunnison county, which produced the marble for the Lincoln Memorial at Washington and for many of the handsomest buildings in Denver, were shut down in 1916. Last summer the work of repairing the railroad to Marble and of re-opening the quarries was started. It is reported that sufficient marble has been contracted for to keep them in operation for several years.

Fluorspar production has been small and chiefly from one mine in Mineral county. A new fluorspar mine is being developed in Jackson county which promises to become a large producer. Other known Colorado fluorspar mines cannot be profitably operated with present prices and costs.

Granite is produced in several localities and is used for monuments and building stone. The smelters, sugar factories

and cement plants require considerable quantities of limestone which is quarried locally. Plastic and fire clays are mined and quarried in many parts of the state, but chiefly in Jefferson and Fremont counties. Kaolin, fullers earth, and other clays are occasionally mined for local use. Small quantities of feldspar and mica are produced, but lack of local markets and high freight rates to eastern points have held back development. For the same reasons, no barytes is now being produced.

The development of the immense deposits of oil shales in the northwestern part of the state is going ahead slowly. No commercial production of oil has been made as yet. A good many large oil companies are acquiring and patenting shale claims.

CONCLUSION

There are only two factors that are likely to check the present revival of Colorado's metal mining industry. One is a shortage of skilled miners and the other is the approaching expiration of the Pittman Act. The latter will, in all probability, cause the shutting down of a good many small silver mines which can make a little profit when silver is worth a dollar or more an ounce, but not when it is lower. It seems likely that there will be more mines developed which can produce other metals as well as silver and which will offset those that depend on silver alone. The labor shortage is not yet acute, if it becomes so it may be a serious deterrent to increased production. We can only hope for the best.

On the whole the outlook is much more encouraging than it has been for several years. As expressed recently by Mr. George A. Stahl, president of the Colorado Metal Mining Association, "We have been stuck at the bottom of the hill, during 1922 we got going in low gear, this year we are in intermediate, by 1924 we expect to be going over the crest in high."

The mining or quarrying of the common non-metallic minerals such as fluorspar, feldspar, mica, barytes, kaolin, and so on, is bound to increase. There are known deposits of all these which have scarcely been touched, as well as of various clays and building stones. The deposits of these minerals in the eastern and middle states are rapidly becoming depleted so that the consumers will have to look to Colorado and other western states for their raw material.

Sooner or later the oil shales will form the basis of one of the largest industries in the state, but this will not be until some one actually demonstrates that shale oil can be produced commercially at a cost comparable to that of petroleum. The mining and retorting of oil shale and the refining of crude shale oil present many interesting problems, none of which have yet been worked out in practice with Colorado shales.

HISTORICAL NOTE

The Bureau of Mines of the State of Colorado was established by an act of the Tenth General Assembly, approved March 30, 1895. This act repealed a previous act creating an "Inspector of Metalliferous Mines," which was passed in 1889. The Bureau of Mines law established the office of Commissioner of Mines, provided for in the State Constitution, and charged him, among other things, with the supervision of metal mine inspection and the enforcement of laws relating to safety and health in metal mines. Subsequently this was broadened to include "any ore mill, sampling works, smelter, metallurgical plant, rock quarry, clay pit, railroad tunnel, rock excavation or mine of whatsoever kind or character, except coal mines." The Commissioner of Mines was also charged, "as he has opportunity and means," to collect mineral specimens and exhibit the same, to collect books relating to mining and geology, to collect and preserve data regarding mining methods, mining costs, milling, metallurgy, geology, mineral deposits of all kinds, and so on. Aside from the purchase of the Elsner collection of minerals, very little "opportunity and means" has been granted to the Commissioners for anything except inspection work. The present activities of the Bureau of Mines are treated elsewhere in this report.

COMMISSIONERS OF MINES

Harry A. Lee.....	May 11, 1895-May 10, 1903
E. L. White.....	May 10, 1903-May 10, 1907
T. J. Dalzell	May 10, 1907-May 10, 1911
T. R. Henahen	May 10, 1911-May 10, 1915
Fred Carroll	May 10, 1915-June 1, 1919
Horace F. Lunt	June 1, 1919-

Note:—Mr. John T. Joyce has been appointed to succeed Mr. Lunt on June 1, 1923.

PUBLICATIONS OF THE BUREAU OF MINES

BULLETINS

- Bulletin No. 1, Recommendations for Safety Appliances in Mining, Harry A. Lee, Commissioner of Mines, 1896.
- Bulletin No. 2, Precious Metal Production for the year 1898, Harry A. Lee, Commissioner of Mines, 1899.
- Bulletin No. 3, Mining Laws Relative to Bureau of Mines, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1899.
- Bulletin No. 4, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1901.
- Bulletin No. 5, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1902.
- Bulletin No. 6, Regulations Relative to the Construction, Equipment and Operation of Metalliferous Mines, Mills and Metallurgical Plants, Recommendations and Mineral Production for 1905, E. L. White, Commissioner of Mines, 1906.
- Bulletin No. 7, Federal and State Laws Relating to Mining, Fred Carroll, Commissioner of Mines, 1916.
- Supplement to Bulletin 7, Mining Laws Enacted by the Twenty-first General Assembly, Fred Carroll, Commissioner of Mines, 1917.
- Supplement No. 2 to Bulletin No. 7, Amendments to the Mining Laws Enacted by the Twenty-second General Assembly, Horace F. Lunt, Commissioner of Mines, 1919.
- Supplement No. 3 to Bulletin No. 7, Amendments to Laws Relating to Mining Enacted by the Twenty-third General Assembly, Horace F. Lunt, Commissioner of Mines, 1921.
- Bulletin No. 8, The Oil Shales of Northwestern Colorado, Horace F. Lunt, Commissioner of Mines, 1919.
- Bulletin No. 9, Mine Safety Standards, Horace F. Lunt, Commissioner of Mines, 1920.

REPORTS

- Report of Bureau of Mines, Colorado, from its establishment in May, 1895, to November 30, 1896, Harry A. Lee, Commissioner of Mines, 1896.
- Report for the Year 1897, Harry A. Lee, Commissioner of Mines, 1898.

- Report for the Year 1898, Harry A. Lee, Commissioner of Mines, 1899.
- Biennial Report for the Years 1899-1900, Harry A. Lee, Commissioner of Mines, 1900.
- Biennial Report for the Years 1901-1902, Harry A. Lee, Commissioner of Mines, 1903.
- Biennial Report for the Years 1903-1904, E. L. White, Commissioner of Mines, 1905.
- Biennial Report for the Years 1905-1906, E. L. White, Commissioner of Mines, 1907.
- Biennial Report for the Years 1907-1908, T. J. Dalzell, Commissioner of Mines, 1909.
- Biennial Report for the Year 1909-1910, T. J. Dalzell, Commissioner of Mines, 1911.
- Biennial Report for the Years 1911-1912, T. R. Henahen, Commissioner of Mines, 1913.
- Biennial Report for the Years 1913-1914, T. R. Henahen, Commissioner of Mines, 1914.
- Biennial Report for the Years 1915-1916, Fred Carroll, Commissioner of Mines, 1916.
- Biennial Report for the Years 1917-1918, Fred Carroll, Commissioner of Mines, 1919.
- Annual Report for the Year 1919, Horace F. Lunt, Commissioner of Mines, 1920.
- Annual Report for the Year 1920, Horace F. Lunt, Commissioner of Mines, 1921.
- Annual Report for the Year 1921, Horace F. Lunt, Commissioner of Mines, 1922.
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At the time this report goes to press, there are available for distribution copies of the Biennial Report for 1915-1916, Annual Reports for 1919, 1920 and 1921, Bulletins 7, 8 and 9. The price of Bulletin 7, with supplements, is 50 cents, all other available publications are free. The supply of publications not mentioned above is exhausted, but copies may be found in many of the public, state and college libraries throughout the country.

Note:—The Colorado Geological Survey, Boulder, Colorado, has published a number of geological reports and maps, a list of which may be obtained from R. D. George, State Geologist, Boulder, Colorado.

TABLE I

PRODUCTION OF THE PRINCIPAL METALS IN COLORADO IN 1921 AND 1922

Compiled from figures by C. W. Henderson, Mineral Geographer, U. S. Geological Survey. Figures for 1922 are preliminary and subject to correction.

	GOLD				SILVER				COPPER				LEAD				ZINC				Increase or Decrease		County			
	1921		1922		1921		1922		1921		1922		1921		1922		1921		1922		Total Value					
	Fine Ounces	Value	Fine Ounces	Value	Fine Ounces	Value	Fine Ounces	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	1921	1922				
Boulder	1,646.78	\$ 34,042	2,276	\$ 47,049	112,957	\$ 112,957	120,687	\$ 120,687	302	\$ 39			140,336	\$ 6,315	87,000	\$ 4,785			153,353	\$ 172,521	\$ +	19,168	Boulder			
Chaffee	1,549.65	32,034	969	20,031	27,641	27,641	26,187	26,187	8,357	1,078	20,000	2,700	318,666	14,340	652,000	35,860	39,000	\$ 1,950	77,043	94,867	+	17,824	Chaffee			
Clear Creek	1,879.42	38,851	1,789	36,982	131,867	131,867	196,222	196,222	21,519	2,776	14,000	1,890	1,200,931	54,042	957,000	62,635	217,000	10,850	238,386	333,329	+	94,943	Clear Creek			
Costilla	2.52	52																	62			—	52	Costilla		
Custer	8.90	184	9	186	19,191	19,191	14,520	14,520	37,690	4,862	32,000	4,320	106,022	4,771	397,509	21,863			29,003	40,889	+	11,881	Custer			
Dolores	89.78	1,856	79	1,633	14,499	14,499	28,994	28,994	744	96	24,000	3,240	18,624	838	85,600	4,708			17,289	38,575	+	21,286	Dolores			
Douglas	2.27	47																	47			—	47	Douglas		
Eagle	3,130.98	64,723	3,489	72,124	682,560	682,550	583,737	583,737	1,833,078	236,467	1,600,000	216,000	12,578	566	308,000	16,940			11,000,000	627,000	984,306	1,515,801	+	631,496	Eagle	
Fremont			30	620			177	177													797		+	797	Fremont	
Glipin	1,916.13	39,610	2,514	61,969	17,963	17,963	43,910	43,910	13,186	1,701	24,000	3,240	91,644	4,124	240,000	13,200					63,398	112,319	+	48,921	Glipin	
Gunnison	881.54	18,223	448	9,261	10,370	10,370	3,808	3,808						61,955	2,338	13,291	731					30,931	13,800	—	17,131	Gunnison
Hinsdale	165.68	3,425	64	1,323	32,039	32,039	50,100	50,100	9,357	1,207	14,000	1,890	65,756	2,959	112,000	6,160					39,630	59,473	+	19,843	Hinsdale	
Lake	14,954.84	309,144	19,734	407,938	1,043,497	1,043,497	962,000	962,000	1,107,295	142,841	870,000	117,450	3,537,889	159,205	5,000,000	275,000	1,821,000	91,050	9,000,000	513,000	1,745,737	2,265,388	+	519,651	Lake	
La Plata	2,185.63	45,181	1,563	32,310	20,327	20,327	10,700	10,700						3,734	168							65,676	43,010	—	22,666	La Plata
Mineral	184.60	3,816	79	1,633	192,468	192,468	119,000	119,000	1,899	245			156,778	7,055	167,000	9,185					203,584	129,818	—	73,766	Mineral	
Montrose							17,000	17,000			62,304	8,411										25,411		+	25,411	Montrose
Ouray	3,542.45	73,229	3,340	69,044	730,970	730,970	533,300	533,300	85,039	10,970	55,000	7,425	1,208,399	54,378	1,450,000	79,760					869,647	689,519	—	180,028	Ouray	
Park	1,995.47	41,250	6,853	141,664	47,547	47,547	15,530	15,530		7,660			654,090	29,434	163,000	8,416					119,205	165,609	—	46,404	Park	
Pitkin					474,226	474,226	525,200	526,200	233	30							283,000	14,150			596,208	717,700	+	121,492	Pitkin	
Routt							82	82														82		+	82	Routt
Saguache	89.78	1,856	238	4,920	90,871	90,871	63,500	63,600	49,512	6,387	42,000	5,670	198,686	8,941	110,000	6,050					108,055	80,140	—	27,915	Saguache	
San Juan	400.16	8,272	1,243	25,695	64,179	64,179	77,634	77,634	28,558	3,684	110,000	14,850	557,655	25,090	1,600,000	88,000			1,300,000	74,100	101,225	280,279	+	179,054	San Juan	
San Miguel	71,054.17	1,468,820	55,658	1,150,553	1,776,963	1,776,963	2,283,000	2,283,000	921,573	118,883	660,000	89,100	8,436,244	379,631	6,900,000	379,500					3,744,297	3,902,153	+	157,856	San Miguel	
Summit	17,358.40	358,830	13,609	281,323	104,198	104,198	118,000	118,000	27,550	3,564	94,000	12,690	504,957	22,723	415,000	22,825			677,000	38,589	489,306	473,427	—	15,878	Summit	
Teller	207,619.84	4,291,883	195,999	4,051,659	37,335	37,336	26,900	25,900													4,329,218	4,077,559	—	251,659	Teller	
Total	330,658.99	\$6,835,328	309,983	\$6,407,917	6,631,657	\$6,631,657	6,809,188	\$5,809,188	4,153,442	\$535,794	3,621,304	\$ 488,876	19,660,466	\$884,721	22,147,400	\$1,218,107	2,360,000	\$118,000	22,954,000	\$1,308,378	\$14,005,500	\$15,232,466	\$ +	1,226,966		
Decrease, 1922			20,675	427,411							632,138	\$ 46,918														
Unit prices		\$20.67		\$20.67		\$1.00		\$1.00		\$0.125		\$0.136		\$0.045		\$0.055		\$0.047		\$0.057						

¹Includes placer production.

PRODUCTION

Gold, Silver, Copper, Lead and Zinc.

The production of gold, silver, copper, lead and zinc for 1921 and 1922 is shown in Table I. The figures for 1921 are final; those for 1922 are preliminary and subject to correction.

The gold dredges in Summit and Park counties, the production of which is included with that of the lode mines in Table 1, recovered bullion containing about 17,154 ounces of gold and 4,170 ounces of silver.

Miscellaneous.

Plastic clay, fire clay, gypsum, lime, mica, graphite, sandstone, marble, fluorspar and other non-metallic minerals have been produced to meet local demands.

There was no production of manganese, tungsten or molybdenum. About 500 tons of carnotite ore containing 2.5 per cent uranium oxide and 3.5 per cent vanadium pentoxide was produced during the year.

Acknowledgement.

Thanks are due to Philip S. Smith, Acting Director, and C. W. Henderson, Mineral Geographer, of the United States Geological Survey, for the production statistics regarding the common metals.

ACCIDENTS

The accidents which occurred, during 1922, to workers in and about the mines, mills, smelters and quarries are tabulated in the following tables according to the U. S. Bureau of Mines system of classification.

NOTES ON THE FATAL ACCIDENTS OF 1922,

Underground.

January 9, in a mine near Leadville, Dee Filson, age 45, a miner, while shoveling in a stope was caught under a fall of ground and instantly killed. His death was due to the failure of his employer to properly timber the stope after having been ordered to do so by the state mine inspector.

March 26, in a mine in Ouray county, Louis Aspurus, age 27, a contract miner, fell while climbing a raise, fractured his skull, and died in a few hours. There were no eye witnesses. The raise was in first-class condition so that it is presumed that he lost his hold on the ladder, possibly by reason of dizziness.

May 22, in a mine near Telluride, John Steiner, a mucker, while shoveling in a stope, was struck by a slab of rock from the roof. He was injured so that he died the following day. His death was due to his failure to obey the superintendent's order to bar down the loose rocks before working under them.

June 11, in a mine in the Cripple Creek district, John Zanzo, age 59, a leaser, was shoveling in a stope when he was hit by a falling rock and knocked into a chute 35 feet below. His skull was fractured and he died a few hours later. He had been warned to stay out of the place which was known to be dangerous, so his death was his own fault.

June 12, in a mine in Lake county, Martin Nelson, age 47, a miner, was suffocated by carbonic acid gas. He and his partner were working in a raise which unexpectedly broke through into old water-filled workings. Nelson went back toward the breast of the tunnel at the foot of the raise while his partner struggled out through the water. The water evidently pulled a quantity of gas from the old workings which caused Nelson's death. If he and his partner had kept a long hole ahead of the back of the raise this accident would have been avoided.

June 15, in a mine in the Cripple Creek district, Thomas Bailey, age 19, a mucker, while shoveling in a stope, was caught under a fall of rock. His neck was broken causing instant death. Had he obeyed the standing orders to bar down loose rock the accident would not have occurred.

June 15, in a mine in the Cripple Creek district, A. M. Colgin, age 52, a machine man, while drilling, was caught under a slab of rock which fell from the roof and injured so that he died a few hours later. Had he obeyed the standing orders to bar down loose rock the accident would not have occurred.

July 19, at a mine near Telluride, John E. Martinez, age 22, a chute blaster, was drawn into a chute by a run of ore and smothered. His death was due to his own carelessness in not keeping hold of a rope which was provided as a safeguard against just such accidents.

August 2, at a mine in Saguache county, Louis Mondragon, age 24, a miner, was struck by a rock which rolled down from above and fractured his skull, killing him instantly. It is supposed that the concussion from blasting in an adjoining stope caused the rock which killed him to start. Evidently he was in a place which was insufficiently safeguarded.

August 6, in a mine in Eagle county, Charles Grose, age 34, a timberman, was caught under a cave in a raise which was being retimbered. After several hours of strenuous labor he was taken out and rushed to a hospital, but he had received internal injuries which resulted in his death the following day. The accident was due to the deceased's disregard of orders to put in false sets before removing the old timbers.

August 6, in a mine near Telluride, Matt D. Briggs, age 33, a machine man, was blown to pieces while loading holes. The primer fell out of a hole he was loading and it is believed that he rammed it back too forcibly, causing the cap to strike the side of the hole.

August 31, at a mine in Summit county, Joe Chondrich, age 44, a mucker, was struck by a falling rock which broke his leg and cut an artery so that he bled to death. If there had been anyone present who knew anything of first aid his death would have been prevented.

December 9, in a mine in Boulder county, F. J. Whiteside, age 40, a miner, was killed by the premature explosion of a round of holes which he was blasting. There were no witnesses, but it is probable that he had trouble in spitting his fuses and staid too long.

December 30, in a mine in La Plata county, James H. Clark, age 38, a drift contractor, while engaged in shoveling was caught by a slab of rock from the wall and received injuries which caused

his death two days later. His failure to bar down or timber up the loose rock before working under it caused his death.

Shaft.

February 8, at a mine in the Cripple Creek district, Gus Britenbaugh, age 45, while working in the bottom of a shaft, had his skull fractured by a small rock which fell from the bucket which was being hoisted above him. It is thought that he failed to steady the bucket as it left the bottom and that the rock was jarred out when it struck the crosshead, 40 feet above.

Surface.

October 13, at a mine in Custer county, John Mahoney, age 60, a miner, fell into an open pit and was killed by the shock. The accident would have been prevented if the pit had been properly railed or fenced.

Mill.

January 20, at a reduction mill near Colorado Springs, Henry H. Brunner, age 29, an electrician, was electrocuted while working in a transformer house. His own carelessness was the cause of his death.

Smelter.

May 28, at a smelter in Fremont county, Frank Henderson, age 29, a mechanic's helper, was electrocuted. There were no eye witnesses, but it is presumed that he carelessly took hold of a live wire to remove it from a pole.

Quarry.

May 21, at a quarry in Fremont county, John Machla, age 34, a quarryman, had his heel crushed by a stone falling on it. He was taken to a hospital immediately but infection set in and caused his death a few days later.

July 6, at a cement plant in Fremont county, Tony DeCallis, age 29, a fireman, stepped on a nail. He did not report for treatment for two days, by which time blood poisoning had set in and caused his death six days later. Had he had the slight injury attended to at once his life would have probably been saved.

Placer.

March 6, at a placer mine near Parker, G. M. Hendricks, age 50, a placer miner, while working alone in a small excavation, had his head caught under a small quantity of gravel which fell from

the roof and was smothered. Insufficient timbering was the cause of the accident.

Dredge.

May 21, at a dredge in Park county, Jesse E. Jarrell, age 32, an oiler, fell into the dredge pond and was drowned. There were no witnesses, but it is supposed that the bank caved in with him. His death was probably due to his own carelessness.

September 7, at a dredge in Summit county, Evan A. Neff, age 32, a dredgemaster, was electrocuted while working in the switch house. The accident was probably due to his own carelessness.

TABLE III

CLASSIFICATION ACCORDING TO CAUSE OF ALL ACCIDENTS IN THE METAL MINING AND QUARRYING INDUSTRY IN THE STATE OF COLORADO DURING THE YEARS 1921 AND 1922.

	Serious Injuries (Time lost over 14 days)				Slight Injuries (Time lost under 14 days)	
	Permanent		Temporary			
	Total Disability	Partial Disability	1921	1922		
Fatal	1921	1922	1921	1922	1921	1922
6	8	...	...	28	35	45
UNDERGROUND						
1. Falls of rock or ore from roof or walls.....
2. Handling of rock or ore—
(a) Loading at face.....	7	5	3
(b) Loading at chute.....	4	9	12
(c) Sledging.....	3	1	7
3. Timber or hand tools.....	10	9	29
4. Explosives—
(a) Transportation.....
(b) Charging.....	1
(c) Suffocation.....	4	...	...	...	...	...
(d) Drilling into old holes.....
(e) Striking in loose rock.....
(f) Thawing.....
(g) Caps, detonators, etc.....	1	...	...	...	...	1
(h) Unguarded shots.....
(i) Returned too soon.....
(j) Premature shot.....	1	1	...	1	1	1
(k) Miscellaneous.....	2	5	8
5. Haulage—
(a) Hand and animal.....	1	10	8	11
(b) Mechanical.....	1	...	...	5	5	1
6. Persons falling down chute, winze, raise or stope.....	3	2	...	9	19	1
7. Run of ore from chute or pocket.....	...	1	...	...	...	10
8. Drilling (by machine or hand drills).....	5	15	2
9. Electricity—	18
(a) Direct contact with trolley wire.....
(b) Tool or bar striking trolley wire.....
(c) Contact with motor.....	3	...	1
(d) Other causes.....	4	...	10
10. Machinery other than 5 and 8.....	1
11. Mine fires.....
12. Suffocation from natural gases.....	1	...	...	...	...	1
13. Inrush of water.....
14. Nails and splinters.....	1	1	2

15.	Other causes—	...	...	...	...	1	12	18	23	17
	(a) Falling objects other than 1 and 2.....	...	...	...	...	1	3	7	16	19
	(b) Flying objects other than 2c.....	...	...	...	...	...	...	1	3	...
	(c) Burns.....	...	...	...	...	2	25	15	50	20
	(d) Miscellaneous.....	...	...	...	...	...	...	...	...	...
	Total.....	16	14	...	...	1	131	155	256	181
	SHAFT									
16.	Falling down shaft.....	...	...	...	...	...	1	...	3	1
17.	Objects falling down shaft.....	...	1	...	...	...	...	3	...	2
18.	Breaking of cables.....	...	...	...	...	...	...	...	...	...
19.	Overwinding.....	...	...	...	...	...	...	...	...	1
20.	Cage, skip or bucket—									
	(a) Runaway.....	...	...	...	...	...	...	...	1	...
	(b) Riding with rock or ore.....	...	...	...	...	...	...	2	2	...
	(c) Riding with timber or tools.....	...	...	...	...	...	...	...	...	1
	(d) Struck by.....	1	...	...	...	...	5	5	4	7
21.	Other causes.....	...	...	...	...	...	...	...	...	...
	Total.....	1	1	...	...	1	6	10	10	14
	SURFACE SHOPS AND PLANTS									
22.	Haulage—									
	(a) Hand and animal.....	...	...	...	...	...	2	4	4	1
	(b) Mechanical.....	...	...	...	...	...	...	2	1	1
23.	Railway cars and locomotives.....	...	...	...	...	...	...	...	...	...
24.	Run or fall of ore in or from bins.....	...	...	...	...	1	29	14	19	14
25.	Falls of persons.....	...	...	...	...	...	...	...	...	...
26.	Nails and splinters.....	...	...	...	...	...	1	6	2	2
27.	Hand tools, axes, bars, etc.....	...	...	...	...	...	...	...	...	...
28.	Electricity—									
	(a) Direct contact with trolley wire.....	...	...	...	...	...	1	...	...	...
	(b) Tool or bar striking trolley wire.....	...	...	...	...	...	...	...	...	...
	(c) Contact with motor.....	...	...	...	...	...	...	2	2	...
	(d) Other causes.....	...	...	...	...	...	6	4	3	3
29.	Machinery.....	...	...	...	...	...	...	...	...	...
30.	Other causes									
	(a) Falling objects.....	...	...	...	...	...	4	12	10	6
	(b) Flying objects.....	...	...	...	...	...	...	1	6	3
	(c) Burns.....	...	...	...	...	...	9	10	15	8
	(d) Miscellaneous.....	...	...	...	...	...	...	...	...	...
	Total.....	...	1	...	...	1	54	55	65	38

SURFACE SHOPS AND PLANTS

[illegible]

CLASSIFICATION ACCORDING TO CAUSE OF ALL ACCIDENTS IN THE METAL MINING AND QUARRYING INDUSTRY IN THE STATE OF COLORADO DURING THE YEARS 1921 AND 1922.—Continued.

	Serious Injuries (Time lost over 14 days)				Slight Injuries (Time lost under 14 days)			
	Permanent Total Disability		Partial Disability		Temporary Disability			
	1921	1922	1921	1922	1921	1922	1921	1922
PLACER MINES—DREDGING								
1. Machinery	2	...	1	...
2. Electricity	1	...	...	...	...	...	1	...
3. Boiler explosions or bursting of steam pipes	2	1	...
4. Falls of persons	1	7
5. Hand tools	1	2	...
6. Other causes	2	...	—	—	—	...	...	...
Total	3	...	...	...	2	3	6	15
ORE DRESSING AND MILLING								
1. Haulage system—
(a) Cars and motors	1	2	...
(b) Mechanical conveyors	1	1	...	...
2. Railway cars and locomotives
3. Crushers, rolls or stamps
4. Tables, jigs, etc.
5. Other machinery	1	3	...	...	6
6. Falls of persons	2	2	2	8
7. Suffocation in ore bins	2	...
8. Falling objects (rocks, timber, etc.)	1	1	1	4
9. Cyanide or other poisoning
10. Scalding (steam or water)
11. Electricity	1	...	...	...	1	...	...	3
12. Hand tools, axes, bars, etc.	3	1	4	...
13. Nails, splinters, etc.
14. Flying pieces of rock from slogging or crushing	1	1	1	1
15. Other causes	7	9	10	6
Total	1	...	...	1	17	16	22	32
SMELTER								
16. Haulage system—
(a) Cars and motors	3	1	2	4
(b) Mechanical conveyors
(c) Hand and animal

[illegible]

CLASSIFICATION ACCORDING TO CAUSE OF ALL ACCIDENTS IN THE METAL MINING AND QUARRYING INDUSTRY IN THE STATE OF COLORADO DURING THE YEARS 1921 AND 1922.—Concluded.

	Fatal 1921 1922	Permanent Total Disability		Serious Injuries (Time lost over 14 days) Partial Disability		Temporary Disability		Slight Injuries (Time lost under 14 days) 1921 1922
		1921	1922	1921	1922	1921	1922	
		1921	1922	1921	1922	1921	1922	
5. Haulage—								
(a) Hand and animal						1		1
(b) Mechanical								1
6. Falling into quarry from surface, benches or face						1		1
7. Falling from hoist, derricks, ladders, etc.						2		1
8. Drilling and channeling (by machine or hand)								
9. Electricity (shock or burns)						1		1
10. Machinery—								
(a) Cables and attachments								
(b) Guys, masts, booms and attachments								
(c) Pumps and hoisting engines					1			
11. Flying pieces of rock from sledging					1			4
12. Nails, splinters, etc.								1
13. Boiler and air tank explosions								
14. Animals								
15. Other causes	1			1	6	5	14	12
Total	1	—	—	1	20	16	38	38
OUTSIDE WORKS								
16. Haulage—								
(a) Hand and animal						2		1
(b) Mechanical					6		1	
17. Railway cars and locomotives	7							
18. Crushers								
19. Cranes, derricks, etc.				1				
20. Other machinery						1	5	3
21. Falls of persons					1		5	2
22. Hand tools					2	2		1
23. Electricity	1				1			1
24. Nails, splinters, etc.								
25. Flying pieces of rock from sledging or crushing								
26. Flying or falling objects (rocks, timbers, etc.)	1				2	3	6	3
27. Burns						1	2	5
28. Other causes							3	8
Total	8	1	—	1	13	8	22	24

¹Includes oil shale accidents.

TABLE IV

CLASSIFICATION ACCORDING TO CAUSE AND OCCUPATION OF THE FATAL ACCIDENTS THAT OCCURRED IN THE METAL MINING AND QUARRYING INDUSTRY OF COLORADO IN THE YEARS 1921 AND 1922.

	MINES									
	Superintend- ents, Fore- men and Engineers	Machine Men and Helpers	Miners	Loaders, Shovelers and Trammers	Trackmen, Pumpmen and Com- pressormen	Cage Tenders and Station Cagers	Carpenters, Timber- men and Helpers	Elec- tricians, Motor- men and Helpers		
	1921	1922	1921	1922	1921	1922	1921	1922	1921	1922
UNDERGROUND										
1. Falls of rock or ore from roof or wall.....	...	3	1	2	1	4	...	...	1	1
2. Handling rock or ore.....
3. Timber or hand tools.....	...	2	1	2	1	...	...	...	1	...
4. Explosives.....	1	...	...	...	...	...
5. Haulage.....
6. Persons falling down chute, winze, false or stope.....	1	2	1	...	...	...	1	...
7. Run of ore from chute or pocket.....	1	...	...	...	...	...	...	...
8. Drilling (by machine or hand drills).....
9. Electricity.....
10. Machinery other than 5 or 8.....
11. Mine fires.....
12. Suffocation from natural gases.....	1	...	...	...	...	...	...	...
13. Inrush of water.....
14. Nails and splinters.....
15. Other causes.....
Total.....	5	3	4	6	3	4	...	...	3	1
SHAFTS										
16. Falling down shaft.....	1	...	...	...	...
17. Objects falling down shaft.....
18. Breaking of cables.....
19. Overwinding.....	1	...	...	...	...
20. Cage, skip or bucket.....
21. Other causes.....
Total.....	1	...	...	...	...

CLASSIFICATION ACCORDING TO CAUSE AND OCCUPATION OF THE FATAL ACCIDENTS THAT OCCURRED IN THE METAL MINING AND QUARRYING INDUSTRY OF COLORADO IN THE YEARS 1921 AND 1922.—Continued.

SURFACE ACCIDENTS

	Superintend- ents and Foremen	Engineers and Hoistmen	Blacksmiths and Mechanics	Carpen- ters and Topmen	Elec- tricians	Others
	1921	1922	1921	1922	1921	1922
22. Haulage
23. Railway cars and locomotives.....
24. Run or fall of ore in or from ore bins.....
25. Fall of persons.....	1
26. Nails and splinters.....
27. Hand tools, axes, bars, etc.....
28. Electricity
29. Machinery
30. Other causes
Total	1

MILLS

	Super- intend- ents and Foremen	Grinding Machinery Men and Millmen	Concen- trator Men	Laborers	Carpenters and Mechanics	Aerial Tram Men and Conveyor Men
	1921	1922	1921	1922	1921	1922
1. Haulage system
2. Railway cars and locomotives.....
3. Crushers, rollers or stamps.....
4. Tables, jigs, etc.....
5. Other machinery
6. Falls of persons.....
7. Suffocation in ore bins.....
8. Falling objects (rocks, timbers, etc.).....
9. Cyanide or other poisoning
10. Scalding (steam or water).....
11. Electricity	1	.....
12. Hand tools, axes, bars, etc.....
13. Nails, splinters, etc.....
14. Flying pieces of rock from sledgeing or crushing.....
15. Other causes
Total	1

SMELTERS

	Superintendent- Foremen 1921 1922	Laborers 1921 1922	Motormen and Switchmen 1921 1922	Furnace Men and Chargers 1921 1922	Feeders and Wheelers 1921 1922
1. Haulage system
2. Railway cars and locomotives
3. Cranes
4. Other machinery	1	...	...	...	...
5. Falls of persons
6. Suffocation in ore bins
7. Flying or falling objects
8. Gas (burns or asphyxiation)
9. Scalding (steam or water)
10. Electricity
11. Hand tools, axes, bars, etc.	1	...	...	...
12. Nails, splinters, etc.
13. Burns from matte, slag or molten metal (pouring or spilling)
14. Hot metal explosions
15. Other causes
Total	1	1	...	...	...

QUARRIES, CLAY PITS AND OIL SHALE MINES

	Superintendent- Foremen 1921 1922	Teamsters 1921 1922	Drillmen 1921 1922	Laborers 1921 1922
1. Haulage .....	...	...	...	7
2. Machinery .....	...	...	...	...
3. Other causes	1	...	1	1
Total	1	1	1	7

PLACERS AND DREDGES

	Miners 1921 1922	Dredgemen 1921 1922	Laborers 1921 1922
1. Machinery .....	...	...	...
2. Electricity .....	...	1	...
3. Other causes	1	...	1
Total	1	1	1

OPERATING MINES IN BOULDER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Alhambra	Caribou	Gilbert Lehmer	832 So. Pearl St., Denver	Gold, Silver (c)
Bellville (a)	Rowena	H. D. Norstrom	Jamestown	Gold, Silver, Lead
Big Horn	Salina	Pomeroy and Johnston	Salina	Gold, Silver (c)
Black Diamond (a)	Sugar Loaf	O. A. Clayton	Sugar Loaf	Gold, Silver
Blue Jay	Jamestown	H. S. Vickery and Climax Spar and Radium Co.	Jamestown	Fluorspar
Blue Ribbon (a)	Crisman	Carlson and Co.	Crisman	Gold, Silver
Bluestone	Caribou	W. P. Sinclair	944 Inca St., Denver	Gold, Silver (c)
Buena Vista (a)	Jamestown	Mrs. G. W. Gordon	Jamestown	Gold, Silver (c)
Caribou	Caribou	Caribou Metals Co.	Boulder	Gold, Silver, Lead
Cash	Magnolia	Siewers Fincher	3046 W. 26th St., Denver	Gold, Silver
Castle	Springdale	Matt Herchen	Springdale	Gold, Silver (c)
Champion Gladiator (a)	Springdale	John L. Pavcett	Jamestown	Gold, Silver (c)
Clipper	Crisman	Clipper Leasing Co.	2341 12th St., Boulder	Gold, Silver
Congo Chief	Caribou	Allied Gold Mining Co.	1216 Pearl St., Boulder	Silver
Dixie	Eldora	S. C. Mathiesen and Assoc.	Fort Collins	Gold, Silver (c)
Dolly Lide (a)	Sunshine	Gunn Brothers	Salina	Gold, Silver (c)
Durias and others (a)	Jamestown	G. W. Gordon	Jamestown	Gold, Silver (c)
Earl-Niagra	Jamestown	Earl-Niagra	Springdale	Gold
East Side	Eldora	Sullivan Brothers	Eldora	Gold, Silver (c)
Emancipation	Salina	A. S. Temple	Boulder	Gold, Silver
Eureka (2)	Boulder	Up-to-Date Mining Co.	Boulder	Gold, Silver (c)
Fortune	Magnolia	Geo. P. and Julia E. Sale	Boulder	Gold
Fourth of July (a)	Jamestown	William Brugger	Jamestown	Gold, Silver (c)
Franklin (East) (a)	Sugar Loaf	P. H. Foyle	Sugar Loaf	Gold, Silver
Franklin (West) (a)	Sugar Loaf	Coughlin and Renshaw	Sugar Loaf	Gold, Silver
Gilpin County and Fairview	Nederland	Fairview Mining Corporation	2144 Franklin St., Denver	Gold, Silver (c)
Golden Age (a)	Springdale	Ward and Cottrell	811 Central Savings Bank Bldg., Denver	Gold, Silver, Lead, Copper (c)
Golden Reward (m)	Nederland	H. C. Gilbert	Nederland	Gold
Goldsmith Maid	Salina	Newell and Assoc.	Salina	Gold, Silver, Lead, Zinc
Gordova	Jamestown	Mrs. Geo. W. Gordon and Co.	Jamestown	Gold
Grant County	Caribou	Caribou Hill Mining Co.	E. & C. Bldg., Denver	Gold, Silver, Lead
Great Britain	Wallstreet	Magor & Co.	Wallstreet	Gold, Silver
Green Spar (a)	Jamestown	Berryman & Co.	Jamestown	Fluorspar
Hope (a)	Springdale	J. H. Wheeler	Springdale	Gold, Silver (c)
Horsfall	Gold Hill	W. L. McCaslin	Farmers Nat'l Bk., Longmont	Gold, Silver (c)
Humboldt	Ward	Humboldt M. & M. Co.	Pueblo	Gold, Silver
Humboldt (a)	Eldora	Huron Gold Ores Co.	404 Cooper Bldg., Denver	Gold, Silver (c)
Indian Point	Jamestown	John R. Leask	Jamestown	Fluorspar (c)
John J.	Jamestown	Federal Reserve Mining Co.	1114 16th St., Denver	Gold, Silver

Kaiser (a)	Jamestown	William Brugger	Jamestown	Gold, Silver (c)
Little Johnnie (a)	Salina	Little Johnnie M. & M. Co.	Salina	Gold, Silver
Logan	Crisman	Logan Metals Company	Boulder	Gold, Silver
Lost Lake (a)	Eldora	W. R. Davis	Eldora	Gold, Silver (c)
Missoula (a)	Magnolia	Missoula M. & M. Co.	Magnolia	Gold, Silver (c)
Moltke (a)	Ward	W. M. Bloomer	2210 Lowell Blvd., Denver	Gold Sil., Lead (c)
Morning Star	Eldora	W. W. Gunter	Eldora	Gold, Silver (c)
Mountain Chief	Fowena	L. C. Hays & Co.	Gold Hill	Gold, Silver (c)
Myrtle	Gold Hill	Providence M. & M. Co.	2684 So. Broadway, Denver	Gold, Silver
Nations Treasure (a)	Jamestown	E. R. Terry	Jamestown	Fluorspar
Nightshade	Sugar Loaf	Thos. Riley and Assoc.	Sugar Loaf	Gold, Silver, Lead
Nil Desperandum	Sunshine	M. S. Brandt	Boulder	Gold, Silver
Ogallala	Wallstreet	Kent & Saxton	Wallstreet	Gold, Silver, Lead
Ophir (a)	Nederland	Ophir Gold and Silver Mfg. and Red. Co.	Nederland	Gold, Silver (c)
Pay Rock (a)	Eldora	The Pay Rock	Caribou	Gold, Silver (c)
Pine Knot	Crisman	Bender & Company	Crisman	Gold, Silver (c)
Poorman	Caribou	"Lark & Company"	Boulder	Gold, Sil., Lead (c)
Potosi	Caribou	Potosi-Caribou Mfg. Co.	653 Broad St., Newark, N. J	Gold (c)
Ready Money (a)	Greendale	Left Hand Mining Co.	Boulder	Gold, Silver
Red Signe	Sugar Loaf	C. A. Barr	Boulder	Gold, Silver
Revenge (a)	Nederland	Guy Miller	Nederland	Gold, Silver
Richmond (East)	Salina	Fred Walters & Co	Salina	Gold, Silver (c)
Richmond (West)	Salina	H. H. McDaniell	Salina	Gold, Silver
Rip Van Dam (a)	Springdale	F. L. Morris	Springdale	Gold, Silver (c)
St. Louis	Glendale	Louis Vancclair & Co.	Jamestown	Gold, Silver (c)
September Morn (a)	Caribou	Hay Stack Mt. Mines Co.	Nederland	Silver (c)
Shirley	Eldora	J. B. Rowley	Eldora	Gold
Skunk Tunnel (a)	Jamestown	J. V. Sybrandt	Springdale	Gold, Silver (c)
Smuggler	Jamestown	Smuggler-Ballar M. & M. Co.	305 Denham Bldg., Denver	Gold, Silver
Snowbound	Gold Hill	Snowbound Mining Co.	Gold Hill	Gold (c)
Sophia	Eldora	Frank J. Anderson	Eldora	Gold, Silver (c)
Tarbox Tunnel	Ward	J. L. Tarbox	Clayton, Illinois	Gold, Silver (c)
Tippecanoe (a)	Fowena	J. W. Pherson	Boulder	Gold, Sil., Lead (c)
Two Sisters (a)	Gold Hill	S. N. Davidson	Gold Hill	Gold, Silver (c)
Violet Ray, etc	Jamestown	Climax Spar & Radium Co.	Jamestown	Fluorspar
Wano	Jamestown	Wano Mining & Milling Co. and Chris. E. Saunders	405 Gas & Elec. Bldg., Denver	Gold
White Raven	Ward	Ernest Graham & Co.	Ward	Silver, Lead
Wigwam	Caribou	Wigwam Mining Co.	Caribou	Gold, Sil., Lead (c)
Wood Mountain	Wallstreet	Wood Mountain Mines Co.	944 Pearl St., Boulder	Gold, Silver
Yellow Pine	Crisman	Yellow Pine Mines & Red. Co.	Boulder	Gold, Silver, Lead

(a) Operated for part of the year only.

(c) No production in 1922.

(m) Mill operated in connection with mine.

OPERATING MINES IN CHAFFEE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gladstone (m)	Buena Vista	Gladstone Mines Co.	Buena Vista	Gold, Silver, Lead, Copper, Zinc
Hershberger Tunnel (a)	Salida	Iowa Mg. and Explor. Co.	Creston, Iowa	Gold, Silver (c)
Independence	Turret	Universal Mg. & Milling Co.	421 Thatcher Bldg., Pueblo	Copper (c)
Lilly	Garfield	Garfield Mg. & Red. Co.	Garfield	Gold, Silver, Lead
Madonna	Monarch	Colorado Mines Exploring Co.	233 Broadway, New York	Gold, Silver, Lead, Copper, Zinc
Marion (a)	Buena Vista	Marion Mg. & Dev. Co.	Marion, Indiana	Gold, Silver (c)
Mount Harward (a)	Buena Vista	Mount Harward Mining Co.	Buena Vista	Cop., Lead, Zinc (c)
Rarua Warrior	Buena Vista	Rarua Warrior Mines Co.	Buena Vista	Gold, Silver
Speedy (a)	Fisher	Myer and Assoc	Buena Vista	Silver, Lead

OPERATING MINES IN CLEAR CREEK COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
A. C. A. (a)	Empire	McDonough and Ketterer	Empire	Gold, Sil., Cop. (c)
Albro	Dumont	Albro Leasing Co.	Dumont	Gold, Sil., Cop. (c)
Alexander (a)	Idaho Springs	George Miner	Idaho Springs	Gold, Silver
Argo	Idaho Springs	Stude-Marie Mining Co.	Idaho Springs	Gold, Sil., Lead (c)
Atlantic Tunnel	Georgetown	Colorado Extension Mining Co.	50 Congress St., Boston, Mass	Gold, Sil., Lead (c)
Atlas	Georgetown	Boston and Clear Creek Mg. Co.	50 Congress St., Boston, Mass.	Gold, Sil., Cop. (c)
Backbone	Silver Plume	Meyer Rosenberg	Silver Plume	Gold, Silver, Lead, Zinc
Bellevue-Hudson	Empire	{ Bellevue-Hudson M. & T. Co. Teagarden & Company	{ 401 Interstate Trust Bldg., Denver	{ Gold, Silver, Lead, Zinc
Black Bear	Idaho Springs	Black Bear Mining Corp.	Idaho Springs	Gold, Silver, Lead, Copper (c)
Blue Bell (a)	Silver Plume	Buxton Bros. and Garrett	Silver Plume	Gold, Silver (c)
Blue Bird (a)	Idaho Springs	E. M. Moscript	Idaho Springs	Gold, Silver, Lead
Buster (a)	Silver Plume	Silver Plume Cons. Mg. Co.	Silver Plume	Gold, Silver, Lead
Calvin	Idaho Springs	Social Six Mining Co.	2241 W. 34th Ave., Denver	Gold, Sil., Lead (c)
Capital (a)	Georgetown	Capital M. & M. Co.	50 Congress St., Boston, Mass.	Gold, Silver (c)
Centennial (a)	Georgetown	Western Mines Synd	Georgetown	Gold, Silver (c)
Charter Oak (a)	Idaho Springs	W. D. Fentile	Idaho Springs	Gold, Silver (c)
Chicago	Idaho Springs	Sampson Benny	Idaho Springs	Gold, Silver
Cleveland Tunnel	Grant	Roanoke M. & M. Co.	Foster Bldg., Denver	Gold, Silver, Lead, Zinc
Combination	Idaho Springs	Quartz Hill Cons. Mg. Co.	Idaho Springs	Gold, Silver
Corbett	Idaho Springs	W. L. Stephenson	Idaho Springs	Gold, Silver, Lead, Copper

County Treasurer(a)	Silver Plume	Silver Plume	Gold, Silver, Lead
Crown Prince (a)	Empire	948 Gas & Elec. Bldg., Denver	Gold, Silver (c)
Dead Jack	Teagarden & Co.	Georgetown	Gold, Silver, Lead
Denver Tunnel	Empire	Idaho Springs	Gold, Silver, Lead
Dives, Seven-Thirty, Coa,			Zinc
City, Diamond Mill (m)	Silver Plume	317 Railway Exchange Bldg., Denver	Gold, Silver, Lead
Dominion	Idaho Springs	Idaho Springs	Gold, Silver, Cop.
Dorit Perkins (a)	Idaho Springs	Idaho Springs	Gold, Silver, Lead
East Griffith (a)	Georgetown	Georgetown	Gold, Silver, Lead
Edgar (a)	Idaho Springs	405 Interstate Bldg., Denver	Copper
Edgar Leeper (a)	Dumont	Dumont	Gold, Silver, Lead
Empress Tunnel (m)	Empire	Empire	Gold, Silver (c)
Esmeralda	Idaho Springs	Idaho Springs	Gold, Sil., Cop. (c)
Esperanza Tunnel	Silver Plume	Ford & Company	Gold, Sil., Lead (c)
Eva (a)	Idaho Springs	James Hamill	Gold, Sil., Lead (c)
Everett (a)	Silver Plume	Stude-Marie Mining Co	Gold, Silver, Lead
Food Cliff (a)	Empire	Michael O'Hay	Gold, Silver, Lead
Franklin	Idaho Springs	Food Cliff Co.	Gold, Sil., Cop. (c)
Franklin	Idaho Springs	Fred Osterman	Gold, Silver
Gem	Idaho Springs	Frank Magneson & Co.	Gold, Silver
Gem, Franklin and Silver	Idaho Springs	Idaho Springs	Gold, Silver, Lead
Age (m)	Idaho Springs	Gem Mining Co	Gold, Silver, Lead
Glasgow	Georgetown	John McCloskey	Copper, Zinc
Gold Belt (a)	Silver Plume	Elmwood M. & E. Co	Gold, Silver, Lead
Gold Dollar Tunnel	Alice	Nick Klaes	Silver Lead, Zinc
Gold Medal (a)	Idaho Springs	Silver Cycle Mining Co	Gold, Sil., Lead (c)
Gold Quartz (a)	Idaho Springs	Stude-Marie Mining Co	Gold, Sil., Lead (c)
Gold Valley Tunnel	Lawson	Columbian Mtn. M. & L. Co.	Gold, Sil., Lead (c)
Golden Edge (a)	Idaho Springs	Golden Edge Mines, Inc.	Silver, Lead, Zinc
Golden Empire and Denver	Empire	Golden Empire Mining Co.	Gold, Silver, Lead
City Mill (m)	Empire	Golden Empire Mining Co.	Copper (c)
Grand-Clear Creek (a)	Empire	G. H. Anderson and Assoc	Gold, Silver, Lead
Hammill Tunnel	Silver Plume	Hammill Tunnel Mining Co.	Silver Plume
Harlem (a)	Alice	Thomas Miner	Gold, Silver, Lead
Idaho Tunnel (a)	Idaho Springs	Fred Olson & Co.	Gold, Silver, Lead
Iron King	Empire	Ed Carlson	Copper, Zinc (c)
Jo Reynolds (m)	Dumont	Diamond Jo M. & R. Co.	Gold, Silver, Lead
Katie S. (a)	Alice	Peter Sweeney	Zinc
Kohold (a)	Idaho Springs	Heilig and Gees	Gold, Sil., Cop. (c)
		Idaho Springs	Gold, Silver (c)
(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.			

OPERATING MINES IN CLEAR CREEK COUNTY 1922.—Continued.

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
La Clide (a)	Idaho Springs	W. C. Fischer	3104 Downing St., Denver	Gold, Silver (c)
League of Nations Tunnel (a)	Grant	Sill Mining Co.	321 Boston Bldg., Denver	Gold, Silver (c)
Lincoln	Idaho Springs	Lincoln M. & M. Co.	Dayton, Ohio	Gold, Silver, Copper
Little Boss (a)	Idaho Springs	Alva Bean & Co.	Idaho Springs	Gold, Silver, Lead, Copper (c)
Little Mattie (m)	Idaho Springs	Mitchell Brokerage Co.	1115 First Nat. Bank, Denver	Gold, Silver (c)
Lombard	Idaho Springs	Tonopah-Colorado Leasing Co.	Idaho Springs	Gold, Silver, Lead, Copper, Zinc (c)
M. and E. Tunnel (a)	Idaho Springs	J. J. Kane	Idaho Springs	Gold, Silver, Lead, Copper
Madison (a)	Idaho Springs	W. C. Fischer	Box 1674, Denver	Gold, Silver (c)
Marguerite "B" (a)	Idaho Springs	Ed. H. Neuschler and Assoc.	2641 Valjejo St., Denver	Gold, Sil., Lead (c)
Mendota (m)	Silver Plume	Wasatch-Colorado Mining Co.	Silver Plume	Silver, Lead, Zinc
Metzger (m)	Alice	Coffman Bros. and Wagner	Alice	Gold, Silver
Millington	Lawson	P. R. Stanhope	Dumont	Gold, Silver, Lead
Mineral Extension (a)	Idaho Springs	M. G. Tarr	Idaho Springs	Gold, Silver (c)
Mt. Felso	Idaho Springs	Mt. Kelso Mining Co.	E. & C. Bldg., Denver	Gold, Sil., Lead (c)
Neglected (a)	Idaho Springs	Charles Olson	Idaho Springs	Gold, Silver, Lead
Nettie B. (a)	Alice	William S. Hall	Alice	Gold, Silver, Copper
Nimrod (a)	Grant	Freund and Hunter	910 26th St., Denver	Gold, Silver, Lead, Zinc (c)
North Fork (a)	Empire	T. A. Tyler	Empire	Gold, Silver (c)
O. S. Storrs	Empire	John A. Heim & Co.	Empire	Gold, Silver (c)
Ontario(a)	Empire	Wm. Young and W. F. Lively	Empire	Gold, Sil., Lead (c)
Oriental Tunnel	Georgetown	A. L. Sealander	Georgetown	Gold, Sil., Lead (c)
Orinoco	Idaho Springs	Surety Gold Mining Co.	Idaho Springs	Gold, Sil., Lead (c)
Orphan (a)	Idaho Springs	Daniel E. Gabriel	Idaho Springs	Gold, Silver, Lead
P. T.	Idaho Springs	Burkhardt & Co.	1515 Blake St., Denver	Gold, Silver (c)
Pay Rock (a)	Silver Plume	Gypson & Morris	Georgetown	Gold, Silver
Platts	Lawson	Smith Lawson M. & L. Co.	Lawson	Gold, Silver, Lead, Zinc
Producer (a)	Georgetown	David Kennedy	Georgetown	Gold (c)
Queen Elizabeth	Idaho Springs	F. J. Hayes Mining Co.	410 Colo. Bldg., Denver	Gold, Silver
Rainbow (a)	Georgetown	Rainbow Mining Co.	Georgetown	Gold, Sil., Lead (c)
Red Lion	Idaho Springs	M. G. Tarr	Mammoth, Arizona	Gold, Sil., Cop. (c)
Reindeer (a)	Silver Plume	Brown Reindeer Mining Co.	Silver Plume	Gold, Sil., Lead (c)
S. P. (m)	Silver Plume	S. P. Silver Mining Co.	31 State St., Boston, Mass.	Gold, Sil., Lead (c)
St. George (m)	Georgetown	St. George Mine Inc.	30 Broad St., N. Y. City	Gold, Silver, Lead, Zinc
Senator	Dumont	Blue Ridge Mines Co.	213 Charles Bldg., Denver	Gold, Silver, Lead
Silver Cycle Tunnel	Idaho Springs	Silver Cycle Mining Co.	732 Cooper Bldg., Denver	Gold, Silver, Lead
Silver King	Dumont	Henry Bolthoff	Hendrie & Bolthoff, Denver	Gold, Silver, Lead
Silver Mountain (m)	Empire	Nelson Leasing & Develop. Co.	Empire	Gold, Silver

Silver Queen (a)	Grant	J. F. Kimberly and Assoc.	Cassells	Gold, Silver (c)
Specie Payment (a)	Idaho Springs	James Hays & Co.	Idaho Springs	Gold, Silver
Standard (a)	Idaho Springs	W. H. Taylor	Idaho Springs	Silver
Summit	Idaho Springs	G. F. Park	Cincinnati, Ohio	Gold, Sil., Lead (c)
Sunburst (m)	Georgetown	Taylor & Mason and Kuth & Brinker	Georgetown	Silver
Teagarden Tunnel (a)	Georgetown	Republican Mines Co	Georgetown	Gold, Silver (c)
Terrible-Dunderberg (m)	Georgetown	Whiting M. & M. Co.	1 Broadway, New York City	Gold, Silver, Lead, Zinc (c)
Treasure Vault	Idaho Springs	Treasure Vault Mining Co.	Denham Bldg., Denver	Gold, Silver, Lead
Turner	Freeland	James Fitzsimmons & Co.	Idaho Springs	Gold, Silver, Lead
Twin Ports and Empire (a)	Empire	Twin Ports and Empire M. Co.	27 Wisconsin Bldg., Superior, Wis.	Gold, Silver (c)
Twin Sisters	Silver Creek	Peter Schurn	Silver Creek	Gold, Silver, Lead
Waldorf	Georgetown	Gilpin Development Co.	31 State St., Boston, Mass.	Gold, Silver
Wilson	Empire	Mrs. A. C. Wilson	515½ N. Main St., Pueblo.	Gold, Sil., Lead (c)
Yukon Girl	Idaho Springs	Jas. Meldrum and C. Y. Simpson	Idaho Springs	Gold, Sil., Lead (c)

OPERATING MINES IN CUSTER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Bassick Extension (a)	Querida	Bassick Extension Mining Co.	Silver Cliff	Silver, Lead
Ben Eaton (a)	Westcliffe	Silverado Ore Company	411 Temple Court, Denver	(c)
Cloverdale (a)	Hillside	Cloverdale Mines Co.	Hillside	(c)
Herman (a)	Westcliffe	Passiflora Mining & Milling Co.	Florence	Silver, Lead, Cop., Zinc
Mary K.	Rosita	E. J. Keim	Westcliffe	
Skeek City (a)	Westcliffe	Bassick Mining Extension Co.	Westcliffe	Gold, Sil., Cop. (c)
Stephens	Rosita	Henry J. Arnold	411 Temple Court, Denver	Gold, Silver (c)
Terrible (m)	Ilse	Colorado Lead Products Co.	Ilse	Lead

OPERATING MINES IN DOLORES COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
A. B. G. (a)	Rico	Robert L. Pellett	Rico	Silver, Zinc
Emma (m)	Dunton	Buffalo Sulphur Refining Co.	420 Denham Bldg., Denver	Gold, Silver
Princeton-Premier (a)	Rico	Robert L. Pellett	Rico	Gold, Silver (c)
Rico (m)	Rico	Syndicate M. & M. Co.	Rico	Gold, Silver (c)
Smuggler (m)	Coke Ovens	Mt Pleasant Mining Co.	Denver	Gold, Silver, Lead,
Wellington	Rico	Rico Wellington Mining Co.	Rico	Copper, Zinc

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN EAGLE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Eagle	Gilman	Empire Zinc Company	Canon City	Gold, Silver, Zinc, Copper
Iron Jack	Gypsum	Frank Kramer and Assoc.	Gypsum	Gold, Silver
Lloyd (a)	Eagle	Lloyd Mining Company	Eagle	(c)
Polar Star	Eagle	Ida M. Butts	Eagle	Gold (c)

OPERATING MINES IN GILPIN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
American Eagle	Central City	Bradford Mines Co.	Central City	Silver, Lead (c)
Annie H. (a)	Apex	Elk Park Mining Co.	1827 Welton St., Denver	Gold, Silver, Lead, Copper
Atkinson (a)	Central City	Thos. and Jas. Atkinson	Central City	Gold, Silver, Lead, Copper (c)
Atlantic (a)	Central City	Denver Mining Pool Co.	1427 16th St., Denver	Gold, Silver, Lead
Bezzant (a)	Russell Gulch	Bezzant Gold Mining Co.	Central City	Gold, Silver (c)
Black Jack (a)	Blackhawk	Silver Mountain Mining Co.	317 Denham Bldg., Denver	Gold, Silver, Lead, Zinc
Buell (a)	Central City	Central City M. M. & S. Co.	Central City	Gold, Silver
Buffalo Chip (a)	Central City	G. M. Hansen	Central City	Gold, Silver, Lead
Cape Cod (a)	Blackhawk	C. H. Woodbridge	Golden	Gold, Sil., Lead (c)
Comer (a)	Apex	J. J. Mining & Milling Co.	2232 Race St., Denver	Gold, Silver, Lead
Comet	Blackhawk	John M. Sullivan & Co.	Central City	Gold, Silver, Lead
Comstock	Rollinsville	Comstock Leasing Co.	Rollinsville	Gold, Silver, Copper
Cornucopia (m)	Central City	Cornucopia L. M. & M. Co.	1824 California St., Denver	Gold, Silver, Copp., Zinc
Cyclops and Paul Jones (m)	Blackhawk	Midwest Mining & Milling Co.	2354 Elm St., Denver	Gold, Silver, Lead
Dorothy	Tolland	O. C. Stewart	Apex	Gold, Silver, Copper
Druid	Russell Gulch	Zancanella Bros.	Russell Gulch	Gold, Silver, Lead, Copper
Dublin (a)	Blackhawk	C. G. Nordlien	Blackhawk	Gold, Silver, Lead
Dumas	Blackhawk	Glaze and Ventress	Blackhawk	Gold, Silver, Lead
Dump (a)	Central City	Dump Mine Co.	Central City	Gold, Silver, Copper
Eagle Nest, etc. (a)	Blackhawk	Hamilton and Printon	Manhattan Beach, N. Y.	Gold, Sil., Copp. (c)
Ella	Rollinsville	B. L. Gibson, Jr.	Rollinsville	Gold
Evergreen (m)	Apex	Evergreen Mines Co.	408 Empire Bldg., Denver	Silver, Copper
Farfield	Russell Gulch	J. C. F. Webb	Russell Gulch	Gold, Silver, Copper, Zinc
Gardner (m)	Russell Gulch	Quartz Hill Cons. Mines, Inc.	Idaho Springs	Gold, Silver, Copper
German	Central City	Aug. Rattner and Bart Unterreisen	Central City	Gold, Silver, Copper

Golden Ledge, etc.	Central City	Golden Ledge Mines Synd	Central City	Gold (c)
Golden Crescent (a)	Blackhawk	Frank L. Branham	Blackhawk	Gold, Silver, Lead,
Golden Star	Rollinsville	Golden Star M. & M. Co.	Rollinsville	Copper
Good Fortune	Rollinsville	A. B. Arnold & Co.	Rollinsville	Gold, Silver (c)
Greenside	Central City	Hoosier M. & L. Co.	Rollinsville	Gold, Silver
Homestake	Rollinsville	Nina Allen M. & M. Co.	Central City	Gold, Silver, Lead
Illinois	Central City	Mammoth Development Co.	Rollinsville	Gold, Silver
Incidental	Russell Gulch	Rochester M. & M. Co.	1216 17th St., Denver	Gold, Sil., Cop. (c)
Irish Rose (a)	Rollinsville	Ivor Williams and Assoc.	Russell Gulch	Gold, Silver, Copper
Jennie Blanche (a)	Blackhawk	Richards & McKay	Rollinsville	Gold, Silver (c)
Joe Bush (a)	Hughesville	A. H. Swarthout	Blackhawk	Gold, Silver (c)
Jupiter-St. Clair	Russell Gulch	Jupiter-St. Clair Mining Co.	Blackhawk	Silver, Lead
Keystone-Bates (a)	Blackhawk	Otto Ruttkamp	806 E. & C. Bldg., Denver	Gold, Silver, Copper
Lucky Jim (a)	Rollinsville	Hope M. & M. Co.	Blackhawk	Gold, Silver, Lead,
Maryland	Rollinsville	Wayland Mines & Red. Co.	401 Jacobson Bldg., Denver	Copper (c)
Mitchell Notaway (a)	Central City	William Mitchell	611 18th St., Denver	Gold, Silver, Copper
Monarch Mill (a)	Rollinsville	B. L. Gibson	Central City	Gold, Silver, Lead,
Mountain Monarch (a)	Rollinsville	S-O-N Company	Rollinsville	Zinc (c)
Ozark	Rollinsville	S. R. Turney and Assoc.	Centerville, Iowa	Gold, Sil., Cop. (c)
Pennsylvania	Central City	H. H. Wherry	Rollinsville	Gold, Silver (c)
Perigo	Rollinsville	Bartle & Co.	Blackhawk	Gold, Silver
Pioneer (a)	Rollinsville	Koy Gast & Co.	Rollinsville	{ Gold, Silver, Copper
Pioneer Mill	Rollinsville	Geo. M. Ashmore	Nederland	{ Gold, Silver, Copper
Queen of the West and	Blackhawk	H. H. Wherry	Rollinsville	Gold, Sil., Lead (c)
Robert Emmett (a)	Central City	Stephens Investment & Trust Co.	Blackhawk	Gold, Silver (c)
Quincy	Tolland	Quincy Gold Mine Co.	Tolland	Gold, Silver (c)
Randolph Mill	Blackhawk	R. H. Ventress	Blackhawk	Gold, Silver (c)
Rara Avis	Central City	Rara Avis Mines Co.	Central City	Gold, Silver Lead,
Senator (a)	Central City	L. Liberman	Central City	Copper
Seven-Thirty (a)	Rollinsville	John Hilton	Central City	Gold, Sil., Lead (c)
Sherman Tunnel (a)	Central City	Sherman Macon M. & M. Co.	Rollinsville	Gold, Sil., Lead (c)
Silver King, etc. (a)	Blackhawk	E. J. Hughes and Assoc.	Blackhawk	Gold, Silver (c)
Smuggler (m)	Rollinsville	New Life M. & M. Corp.	Blackhawk	Gold, Silver, Lead,
Soldier Boy	Central City	Daniel Munday	Rollinsville	Copper (c)
Spotted Horse (a)	Rollinsville	Ivor Williams and Assoc.	1314 Marion St., Denver	Gold, Silver
Two Lassies and San Souci	Central City	Sayre & Klein	Rollinsville	Gold, Silver (c)
Wain, etc.	Central City	Alice-Theora Mining Co.	Golden	Gold, Silver, Lead,
War Dance	Central City	War Dance Leasing Co.	Central City	Zinc
West Notaway	Central City	J. E. Warnecke & Co.	Idaho Springs	Gold, Sil., Cop. (c)
			Central City	Gold, Silver
				Gold, Silver, Copper

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN GRAND COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Happy Dream	Parshall	C. B. Wider	Parshall	Gold, Copper (c)
Ready Cash (a)	Empire	Helping Hand M. & M. Development Co.	336 Gas & Elec. Bldg., Denver	Silver, Lead (c)
W. I. M. Tunnel (a)	Empire	Coop. Metal Mines Co.	Empire	Gold, Silver (c)

OPERATING MINES IN GUNNISON COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Akron	Whitepine	Whitepine Mines	Whitepine	Gold, Silver (c)
Augusta	Tested Butte	Allied Mines Corp.	Crested Butte	Gold, Silver
Carter (m)	Ohio City	Carter Mines Company	Ohio City	Gold, Silver
Cotoba	Whitepine	Cotoba Mining Company	510 Ridge Arcade, Kansas City, Mo.	Gold, Silver (c)
Florence	Spencer	Florence Leasing Co.	Gunnison	Gold
Gold Link	Gunnison	J. F. Robinson	Gunnison	Gold, Silver, Lead
Gold Texas	Buena Vista	Yale Gold Mining and Utility Co.	Buena Vista	Gold (c)
Lucky Strike (m) (a)	Gunnison	L. H. Brimhall and Assoc.	Gunnison	Gold
Mariposa (m)	Crested Butte	Miller & Oram	Crested Butte	Silver, Lead, Zinc, Copper
Roosevelt	Pitkin	Roosevelt Mines and Elec. Co.	Pitkin	Gold

OPERATING MINES IN HINSDALE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Belle of the East	Lake City	{ W. E. Mendenhall	Lake City	Gold
Belle of the West	Lake City	{ John Ilgaudes	Lake City	Silver, Copper
Black Wonder	Lake City	Belle of the West Mining Co.	Lake City	Gold, Silver
Buckeye	Lake City	John Ilgaudes	Lake City	Gold, Silver (c)
Cleveland	Lake City	George D. Jordan and F. S. Williams	Lake City	Gold, Silver
Fanny Fern (m)	Lake City	Home Investment Company	Lake City	Gold, Silver
Gallie-Vulcan (a)	Lake City	Fanny Fern Mining Co.	Lake City	Gold, Silver, Lead
General Sherman and Gladiator (a)	Lake City	Ben Guionneau	Lake City	Gold, Silver (c)
George III	Lake City	A. Andrik	Lake City	Gold, Silver (c)
Golconda	Carson	Childs Park Mining Co.	1257 Race St., Denver	Gold, Silver
Golden Fleece	Lake City	Golconda Mines Cons. Inc.	Lake City	Gold, Silver
Hidden Treasure	Lake City	Chine, Simpson & Westensen	Olathe	Gold, Silver
		Pittman Lease Co.	Lake City	Silver, Lead

Ilma-Hiwassee (a)	Lake City	J. F. Steinbeck	Lake City	Gold, Silver
Lellie	Lake City	Silverman Mines Co.	Lake City	Gold, Silver, Lead, Copper
Ocean Wave and Vermont	Lake City	R. Philips	La. Junta	Silver, Copper
Sulphurette	Lake City	Sulphurette M. & M. Co.	Lake City	Silver
Ute (a)	Lake City	Atkins & Duff	Lake City	Silver, Lead

OPERATING MINES IN JACKSON COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Colorado Fluorspar	Cowdrey	Colorado Fluorspar Corp.	Cowdrey	Fluorspar

OPERATING MINES IN LAKE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
A. Y. and Minnie	Leadville	Bartell Lease and Wicklund and Hill	Leadville	Gold, Silver, Lead, Zinc
Big 4 (a)	Twin Lakes	Big 4 Mining Co.	Twin Lakes	Gold, Silver (c)
Blaine Shaft	Leadville	Porrest City Lease	Leadville	Zinc
Breece Shaft No. 1	Leadville	Breece Lease	329 West 8th St., Leadville	Gold, Silver (c)
Canterbury Tunnel	Leadville	Leadville Mine Dev. Co.	Emmet Block, Leadville	Silver
Chrysolite No. 2 Shaft	Leadville	Clifford Sims	Delaware Block, Leadville	Silver, Lead
Cleveland	Leadville	Cleveland Mining Co.	Bank Annex, Leadville	Gold, Silver, Lead
Daly Shaft	Fryer Hill	Little Chief Mining Co.	Leadville	Silver, Lead
Dhoro	Leadville	Inez Mining Co.	Leadville	Gold, Silver
Fanchon	Leadville	Frank Zaitz & Co.	Leadville	Silver (c)
Fanny Rawlins	Leadville	Fanny Rawlins Leasing Co.	Delaware Block, Leadville	Gold, Silv., Copper
Fidelity	Leadville	Fidelity M., M. & P. Co.	313 So. Phillips St., Philadelphia, Pa.	Gold, Silv., Copper
Fortune	Leadville	Fortune Mining Company	Leadville	Gold, Silver, Lead, Copper (c)
Garden City	Leadville	James Foutz & Co.	401 West 3rd St., Leadville	Gold, Silver
Hayden Shaft	Leadville	M. J. Brennan	P. O. Bldg., Leadville	Zinc (c)
Henrietta and Maid of Erin	Leadville	Henrietta Mines Co.	Bank Annex, Leadville	Silver, Lead, Zinc
Hibschle Shaft	Leadville	Seventh St. Mining Co.	Leadville	Silver, Lead
Ibex	Leadville	Ibex Mining Co.	401 Harrison Ave., Leadville	Gold, Silv., Copper, Lead, Zinc
La Plata	Leadville	David D. Nord	Leadville	Gold, Silver, Lead
Lillian	Leadville	Tim Riley & Co. and Guy Murcay & Co.	500 West 8th St., Leadville	Gold, Silv., Copper, Zinc
Matchless No. 7	Leadville	Liden & Company	415 East 8th St., Leadville	Silver
(a) Operated for part of the year only.				
(c) No production in 1922.				
(m) Mill operated in connection with mine.				

OPERATING MINES IN LAKE COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Mikado	Leadville	Mikado Lease	Box 606, Leadville	Silver, Lead, Zinc (c)
Penrose	Leadville	Down Town Mines Co.	Leadville	Gold, Silv., Copper, Lead, Zinc
Ponsardin	Leadville	Seneca Property	2260 Bellaire St., Denver	Silver, Lead, Zinc (c)
Prince of Wales	Leadville	Prince of Wales Leasing Co.	Leadville	Gold, Silver, Zinc
Robert E. Lee	Leadville	Frank Zaltz	Leadville	Silver (c)
Robert Emmet (a)	Leadville	Emil Ekstrand & Assoc.	Leadville	Gold, Silver
St. Kevin (Rosse Tunnel)	Leadville	Robert D. Elder	310 West 8th St., Leadville	Gold, Silver
St. Louis	Leadville	St. Louis Cons. Mines Co.	Natick, Mass.	Gold
Shamus O'Brien	Leadville	New Denver City Mining Co.	Delaware Block, Leadville	Silver
Snowlode Tunnel	St. Kevin	Wilkesbarre Leasing Co.	Box 342, Leadville	Silver
South Ibox	Leadville	South Ibox Mines Co.	Leadville	Gold, Silv., Copper, Zinc
Tiger Shields	Leadville	Metals Exploration Co.	201 14th St., Denver	Silver
Tucson	Leadville	John Harvey & Assoc.	Leadville	Lead, Zinc
Wall Street Shaft	Leadville	Izard Lease—John Harvey	Leadville	Gold, Silver, Lead
Yak	Leadville	American Smelting & Refining Co.	120 Broadway, New York	Gold, Silver, Lead, Zinc, Iron
Young Tunnel, etc.	Leadville	Little Jean Mining Company	Room 1, Good Block, Denver	Gold, Silver (c)

OPERATING MINES IN LA PLATA COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gold Crown Mountain	La Plata	Ludwig Vata & Assoc.	Silverton	Gold, Silver
Idaho and Valley View	Hesperus	Valley View Cons. G. M. Co.	Detroit, Michigan	Gold, Silver
Incas	Hesperus	Lucky Five Leasing Co.	Durango	Gold, Silver
Jumbo (a)	May Day	Jumbo Mining Company	Durango	Gold, Silver (c)
Jumbo (Ruby Tunnel)	May Day	Paul Dapra Leasing Co.	May Day	Gold, Silver
Little La Plata (a)	La Plata	Lady Eleanor Mining Co.	La Plata	Gold, Silver (c)
May Day	May Day	Cumberland Mines Co.	302 Denham Bldg., Denver	Gold, Silver
Mountain Lilly	La Plata	Boyle & Hughes	Durango	Gold, Silver
Muldoon	Hesperus	Myres & Voight	Hesperus	Silver
Puzzle (a)	Durango	Puzzle Mining Company	Durango	Gold, Silver (c)
Southern Boy (a)	Durango	R. E. Hutchinson & Assoc.	Durango	Gold, Silver

OPERATING MINES IN LARIMER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Windy Peak	Manhattan	Geo. Asher & Co.	Home	Gold, Silver (c)

OPERATING MINES IN MESA COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Calamity and Maverick	Gateway	Radium Company of Colorado	Radium Bldg., Denver	Carnotite

OPERATING MINES IN MINERAL COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Amethyst	Creede	Norman Alsbaugh	Creede	Silver
Bachelor and Spar	Creede	Bachelor M & M. Co.	U. S. Nat. Bank Bldg., Denver	Gold, Silver, Lead
Corsair	Creede	Welle & Comstock	Creede	Silver
Colewood	Creede	E. M. Neff & Assoc.	Creede	Silver
Fluorspar	Wagon Wheel			
	Gap	American Fluor Spar Co.	Wagon Wheel Gap	Fluorspar
Silver King	Creede	Midwest Mining Company	Creede	Silver
Solomon	Creede	H. D. Barnhart	Creede	Gold, Silver, Lead,
Windsor-Governor-Taylor-Metropole	Creede	Chama Leasing Company	Creede	Zinc
				Silver

OPERATING MINES IN MONTROSE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Cashin	Placerville	Arps Lem-Pom Mining Co.	Bedrock	Silver, Copper
Long Park	Naturita	United States Radium Corporation	58 Pine St., New York City	Carnotite
Marvel, etc	Naturita	Radium Company of Colorado	Radium Bldg., Denver	Carnotite (c)
(m)	Naturita	Standard Chemical Co.	Vanadium Bldg., Pittsburgh, Pa.	Carnotite

OPERATING MINES IN OURAY COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Atlas (m)	Sneffels	Atlas Mining & Milling Co.	Sneffels	Gold, Silver, Lead,
Bachelor	Ouray	Martin Borlatti	Ouray	Zinc
Barstow (m)	Ouray	C. R. Wilfey	Ouray	Gold, Silver, Lead,
Bimetallist	Sneffels	King & Price Leasing Co.	Ouray	Zinc
(a) Operated for part of the year only.				
		(c) No production in 1922.	(m) Mill operated in connection with mine.	Gold, Silver

OPERATING MINES IN OURAY COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gaudalope	Ouray	Lucky Twenty Mining Co.	Ouray	Silver, Copper
H. A. C.	Ouray	Chibeta M., M. & S. Co.	Ouray	Gold, Silver
Monas Queen	Ouray	White Cloud M. & M. Co.	Brush	Lead, Zinc (c)
Mountain Top (m)	Sheffels	Mountain Top Mining Co.	Ouray	Gold, Silver, Lead, Copper, Zinc
Paymaster	Ouray	Paymaster Mines Co.	413 Cooper Bldg., Denver	Gold, Silver (c)
Polar Star	Ouray	Polar Star Mining Syndicate	Ouray	Silver, Copper
Revenue Tunnel	Ouray	Revenue Tunnel Mines Co. and Sheffels Leasing Co.	Ouray	Gold, Silver, Lead, Zinc
Wanakah	Ouray	Welch-Worland Mines Syndicate	Ouray	Gold, Silver
Wedge	Ouray	Jesse Steele and Fellin Bros.	Ouray	Silver

OPERATING MINES IN PARK COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Champaign (a)	Alma	Pulaski Inv. M. & P. Co.	Alma	Silver (c)
Concord Chief, Metz (a)	Webster	J. N. Redman & Assoc. Thomas Lambie	Alma 2012 Larimer St., Denver	Gold, Silver, Zinc Gold, Silver, Lead, Copper (c)
Etna (a)	Alma	A. H. Reynolds	Centerburg, Ohio	Gold, Silver (c)
Funston and Lookout	Alma	J. C. Askwig & Co.	North Platte, Nebraska	Gold, Silver
London	Alma	London Gold Mines Co.	Colorado Springs	Gold, Silver, Lead
Lucky Strike	Webster	Tomco Brothers	Cassells	Gold, Silv., Copper
Magnolia	Alma	Leverett Davis	217 Engineers Bldg., Denver	Gold, Silver
Missouri	Cassells	C. M. Snyder	Cassells	Gold, Silver, Lead, Copper
Paris and Excelsior (c)	Alma	Mt. Bross Ores Company	311 Cen. Sav. Bk. Bldg., Denver	Gold, Silver (c)
Russia or Lincoln	Alma	Lincoln Cons. Mining Co.	Alma	Gold, Silver, Lead, Zinc
Sweet Home (a)	Alma	Sweet Home Gold and Silver Mining and Milling Company	408 Tramway Bldg., Denver	Gold, Silver (c)
Whale	Webster	Whale Mines Leasing Co.	Gas and Elec. Bldg., St. Louis, Mo.	Gold, Silver, Lead, Zinc

OPERATING MINES IN PITKIN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Bonnybel (a)	Aspen	W. D. Beck	Aspen	Silver, Lead
Cowenhoven Tunnel and Hunter Creek Mill (m)	Aspen	Silver Mines Co. of America	801 Magee Bldg., Pittsburgh, Pa.	Silver, Lead

Hope Tunnel	Aspen	Hope M., M. & L. Co.	Aspen	Silver
Hurricane	Aspen	Hurricane Leasing Co.	Aspen	Silver, Lead (c)
Jewell	Aspen	Jewell Mining Company	517 Dan Waggoner Bldg., Fort Worth, Texas	Silver (c)
Midnight	Aspen	Midnight Mining Company	Aspen	Silver, Lead (c)
Newman Tunnel	Aspen	Newman M., M. & L. Co.	Aspen	Silver, Lead
Park Tunnel	Aspen	Park T. & M. Co.	Aspen	Silver, Lead
Shamrock (a)	Aspen	R. E. Dube and J. L. Smoky	1241 Pearl St., Denver	Silver (c)
Smuggler (m)	Aspen	Smuggler Leasing Co.	Aspen	Silver, Lead
Spar	Aspen	Spar Cons. Mining Co.	Aspen	Silver
Veteran Tunnel	Aspen	Spar Cons. Mining Co. and Millinee Mining Co.	Aspen	Silver

OPERATING MINES IN ROUTT COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Blue Jay	Hahns Peak	Claud McFadden	Hahns Peak	Gold, Silver (c)
Florence R.	Hahns Peak	Glen Robbins	Hahns Peak	Gold, Silver (c)
Royal Flush, etc.	Columbine	Hahns Peak Gold M. & M. Co.	Columbine	Gold, Silver, Zinc,
Tom Thum and New Discovery	Steamboat Sp'gs.	Tom Thum Syndicate	Steamboat Springs	Copper (c) Gold, Silver (c)

OPERATING MINES IN SAGUACHE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Cocomongo	Villa Grove	Cocomongo Mines Co.	Salida	Gold, Silver, Lead, Copper
Eagle (a)	Villa Grove	Saguache Eagle Mining Co.	Villa Grove	Silver
Eastern Star and Annex (a)	Crestone	James E. Allen	Crestone	Gold
Joe Wheeler (a)	Alder	Joe Wheeler Mining & Dev. Co.	Box 1185, Pueblo	Gold, Silver (c)
Orient	Villa Grove	Colorado Fuel & Iron Co.	Boston Bldg., Denver	Iron
Itawley (m)	Bonanza	Colorado Corporation	201 14th St., Denver	Silver, Copper

OPERATING MINES IN SAN JUAN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Bagley	Animas Forks	Wide West Mining Co.	Silverton	Gold, Silver
Caledonian (m)	Pureka	Caledonian M. & M. Co.	Pureka	Silver, Lead, Zinc
(a) Operated for part of the year only.		(c) No production in 1922.	(m) Mill operated in connection with mine.	

OPERATING MINES IN SAN JUAN COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Coming Wonder	Silverton	Anvil Leasing Company and F. Thompson and Assoc.	Silverton Eureka	Gold, Silv., Copper, Zinc
Cranky	Silverton	Rolling Mt. M. & M. Co.	100 Broadway, Denver	Gold, Silver, Lead, Copper, Zinc
Dives	Howardsville	D. MacLean and Assoc.	Durango	Gold, Silver
Fredrick	Silverton	Patrick Mallay and Assoc.	Silverton	Gold, Silver
Garryoven Tunnel	Howardsville	Wide West Mining Company	Silverton	Gold, Silver
Hamlet (m)	Silverton	Hamlet-Dexter M. & M. Co.	Silverton	Gold, Silver (c)
Henrietta	Silverton	Henrietta Copper Mining Co.	1816 California St., Denver	(c)
Highland Mary	Silverton	Nick Graft	Silverton	(c)
Iowa	Silverton	Melville M. & M. Co.	Silverton	Gold, Silver, Lead, Copper
Joe and John (a)	Silverton	Golden Cons. Mines Co.	1816 California St., Denver	Gold, Silver (c)
Little Nation	Howardsville	Little Nation Mining Co.	423 Lee Bldg., Kansas City, Mo.	Gold, Silver, Lead, Copper (c)
Mayflower	Silverton	Mayflower M. & M. Co.	Silverton	Gold, Silver, Lead, Copper (c)
North Star (a)	Silverton	H. L. Hollis	435 Ry. Exchange, Chicago, Ill.	Gold, Silver (c)
Otte Group (a)	Silverton	American Mining and Refining Corp.	Elliott Square, Buffalo, N. Y.	Gold, Silver, Lead, Copper, Zinc (c)
Pride of the West	Howardsville	Joseph Gibbon Cons. M. & M. Co. and Wide West Mining Company	Silverton	Gold, Silver, Lead, Copper, Zinc
Queen City	Silverton	John Johnson and Michael Burns	Silverton	Gold, Silver, Lead, Copper
Silver Queen	Animas Forks	Wide West Mining Company	Silverton	Gold, Silver
Slide	Stony Pass	W. A. Davis	Silverton	Silver
Sunnyside (m)	Eureka	Sunnyside M. & M. Co.	Eureka	Gold, Silver, Lead, Copper, Zinc

OPERATING MINES IN SAN MIGUEL COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Alta (m)	Telluride	Belmont Wagner Mining Co.	500 Bullitt Bldg., Philadelphia, Pa.	Gold, Silver, Lead, Copper
Black Bear	Telluride	Colorado Superior Mining Co.	Telluride	Gold, Silver, Lead, Zinc, Copper
Carbonero	Ophir	Ruittilla-Brown Leasing Co.	Ophir	Gold, Silver, Lead, Zinc, Copper
Caribou Mill	Ophir	Frank Saunders and Assoc.	Ophir	Zinc, Copper

Coltco.	Vanadium	Coltco Mining Company	401 Bernice Bldg., Tacoma, Wash.	Silver
Humboldt.	Telluride.	Humboldt Mines Company	Telluride.	Gold, Silver, Lead
New Dominion.	Ophir.	Ophir Gold Mines & R. Co.	Ophir.	Gold, Silver, Lead, Copper, Zinc
Nitelite Vulcan Camp	Vanadium	Dr. S. A. Sochocky	Vanadium	(c)
San Bernardo (m)	Ophir.	Vailey View Leasing & Mining Co.	Ophir.	Gold, Silver, Lead
Shamus O'Brien (a)	Ophir.	Shamus O'Brien Lease.	Ophir.	Gold, Silver
Silver Bell (m)	Ophir.	Ophir Loop Mines & Metals Co.	Ophir.	Gold, Silver, Lead, Copper
Sheridan Crosscut and Perino Mill (m)	Telluride.	Gold Drift Leasing Company and James J. McLaughlin Lease.	Telluride.	Gold, Silver
Smuggler (m)	Telluride.	Smuggler-Union Mining Co.	Telluride.	Gold, Silver, Lead
Tomboy (m)	Telluride.	Tomboy Gold Mines Co., Ltd.	Telluride.	Gold, Silver, Lead, Copper, Zinc

OPERATING MINES IN SUMMIT COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Congress Tunnel (a)	Montezuma.	Moon Beam Mines Syndicate.	Colorado Springs.	Silver, Lead, Zinc
Detroit.	Breckenridge.	Detroit Leasing Company	Breckenridge.	Gold, Silver
Etta M. (a)	Frisco.	Ecklund & Kempf.	Frisco.	Silver, Lead (c)
Four-Most	Frisco.	Four-Most M. & M. Co.	509 Pennsylvania St., Denver.	Gold, Silver, Lead
Fredonia.	Breckenridge.	Frank Peabody & Co.	Breckenridge.	Silver
Ground Hog	Breckenridge.	Ground Hog Leasing Co.	Breckenridge.	Silver (c)
Hunkidory.	Montezuma.	Silver M., M. & L. Co.	1126 Fox St., Denver.	Silver, Lead
James Boy (a)	Dillon.	James Boy Mining Co.	Denver.	Copper (c)
Jerry.	Montezuma.	H. E. McCray.	Montezuma.	Silver, Lead, Zinc
June Bug	Breckenridge.	Boyce Brothers.	Breckenridge.	Gold, Silver, Lead
King Solomon.	Frisco.	King Solomon Mining Co.	526 Min. Exc. Bldg., Denver.	Gold, Silver
Michigan.	Kokomo.	Michigan Uthoff Mines.	Bank Annex, Leadville.	Gold, Silver
Pennsylvania (a)	Montezuma.	Persistent M., M. & L. Co.	38 West Maple St., Denver.	Lead, Silver
Rothchilds Tunnel (a)	Montezuma.	Liberty Mining & Reduction Co.	Montezuma.	Lead, Silver
Royal Tiger (m)	Breckenridge.	E. F. and J. A. Gustafson	Montezuma.	Gold, Silver, Lead, Zinc
		Royal Tiger Mines Co.	Tiger.	
Silver King.	Montezuma.	E. F. Brophy & Co.	Montezuma.	Silver, Lead, Zinc
Silver Tip.	Montezuma.	F. S. Chillon.	Montezuma.	Silver, Lead
Warriors Mark.	Breckenridge.	Warriors Mark Mining Co.	Boston, Mass.	Silver, Copper
Wellington (m)	Breckenridge.	Wellington Mines Company	Breckenridge.	Gold, Silver, Lead, Zinc

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN TELLER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Ajax	Cripple Creek	Alax Leasing Co. and Tonopah-Alax Mining Co.	422 First Nat. Bk. Bldg., Denver	Gold
American Eagles	Cripple Creek	Stratton C. C. M. & D. Co.	117 E. Pikes Peak Ave., Colorado Springs	Gold
Blue Flag	Victor	Blue Flag-Silverton Gold Mines Co.	503 Exchange Bldg., Denver	Gold (c)
Conundrum	Cripple Creek	Phoenix Deep Mining Co.	Denver	Gold (c)
Coriolanus	Cripple Creek	B. F. Hill	Cripple Creek	Gold (c)
Cresson	Cripple Creek	Cresson Cons. G. M. & M. Co.	Colorado Springs	Gold
Dig Gold	Cripple Creek	Dig Gold Mining Co.	Cripple Creek	Gold
Doctor Jack Pot	Cripple Creek	Doctor Jack Pot Mining Co.	Cripple Creek	Gold
Elkhorn (a)	Cripple Creek	Elkhorn Mining & Leasing Co.	35 Independence Bldg., Colorado Springs	Gold (c)
Elkton	Cripple Creek	Raven Hill Mining & Leasing Assn.	206 Hagerman Bldg., Colorado Springs	Gold
El Paso (a)	Cripple Creek	El Paso Cons. Gold Mining Co.	617 Majestic Bldg., Denver	Gold
Findley (a)	Cripple Creek	Findley Mines Co.	Cripple Creek	Gold
Forest Queen	Cripple Creek	Edwin Gaylord	Cripple Creek	Gold (c)
Free Coinage (a)	Cripple Creek	Ducey & Co.	Independence	Gold
Gold Bond (a)	Cripple Creek	Gold Bond Syndicate	115 No. 3rd St., Cripple Creek	Gold
Gold King	Cripple Creek	Gold King Mining Co.	Box 123, Colorado Springs	Gold
Granite	Victor	Granite Gold Mining Co.	301 Mining Exchange Bldg., Colorado Springs	Gold
Hiawatha	Cripple Creek	A. J. and L. E. Wirebaugh	Cripple Creek	Gold (c)
Ironclad (a)	Cripple Creek	Ironclad Hill Mining & Dev. Co.	Cripple Creek	Gold (c)
Isabella (a)	Victor	Isabella Mines Company	222 Burns Bldg., Colorado Springs	Gold
Jerry Johnson	Cripple Creek	Jerry Johnson Gold Mining Co.	Cripple Creek	Gold
Kalamazoo	Independence	Giblin & Co.	Independence	Gold (c)
Little Fontleroy	Cripple Creek	McClanahan Gold Mining Co.	1520 Welton St., Denver	Gold (c)
Mary McKinney	Cripple Creek	Mary McKinney Mining Co.	Cripple Creek	Gold
Midcot	Cripple Creek	Midcot Cons. Gold Mining Co.	Cripple Creek	Gold
Modoc (m)	Cripple Creek	Modoc Cons. Mines Co.	837 Symes Bldg., Denver	Gold
New Gold Dollar	Cripple Creek	New Gold Dollar Mining Co.	Cripple Creek	Gold
Nightingale	Cripple Creek	Eureka Leasing Co.	Burns Bldg., Colo. Springs	Gold
Portland (m)	Cripple Creek	Portland Gold Mining Co.	Colorado Springs	Gold
Puzzle	Cripple Creek	Green and Goldstein	Cripple Creek	Gold
Rose Nicol	Cripple Creek	Kyner & Co.	Cripple Creek	Gold
Sangre de Christo	Cripple Creek	Reclamation Metal Mines Co.	7 North Telson St., Colorado Springs	Gold
Santa Rita	Cripple Creek	P. J. Hamstrom	Victor	Gold
School Section No. 3 (a)	Cripple Creek	John Farrell	Cripple Creek	Gold
South Burns	Cripple Creek	LeBrun Mining Association	Cripple Creek	Gold
Star of Bethlehem	Cripple Creek	Cooper and Anderson	Cripple Creek	Gold
Victindicator, etc.	Cripple Creek	{ Victindicator Cons. G. M. Co. United Gold Mines Co.	503 Symes Bldg., Denver	Gold

OPERATING OIL SHALE PROPERTIES IN GARFIELD COUNTY, 1922

Name	Location	Operator	P. O. Address
Little Jim	Grand Valley	Joseph D. Ahearn	Glenwood Springs
	Grand Valley	American Shale Refining Co.	First Nat. Bank Bldg., Denver
	Grand Valley	T. E. Bailey & Co.	Grand Valley
	DeBeque	Bales & Carlisle	DeBeque
	Grand Valley	J. W. Bell	Glenwood Springs
	DeBeque	Black Queen Shale Co.	Grand Junction
Black Diamond	DeBeque	C. C. Bruner and Assoc.	Delta
Callahan	Grand Valley	Callahan Oil Shale Co.	First Nat. Bank Bldg., Denver
	Grand Valley	Campbell Refining Corporation	250 West 57th St., New York
Kimball Creek	DeBeque	Colorado Carbon Co., Inc.	700 E. & C. Bldg., Denver
Columbia	Grand Valley	Columbia Oil Shale & Refining Co.	532 Equitable Bldg., Denver
D. A. Sullivan	DeBeque	D. A. Sullivan and Assoc.	Delta
Herwick Placers	Grand Valley	James Doyle	Denver
Doyle Schuyler	Grand Valley	E. D. Milhken	First Nat. Bank Bldg., Denver
	Grand Valley	R. L. Eaton	Glenwood Springs
Good Hope	Collbran	J. F. Gregory	Glenwood Springs
	Grand Valley	Joseph Juhon	DeBeque
	DeBeque	Index Shale Oil Co.	DeBeque
	Grand Valley	Monarch Shale Oil Co.	722 Symes Bldg., Denver
Mt. Logan	DeBeque	Mt. Logan Oil Shale M. & R. Co.	DeBeque
	Grand Valley	L. P. Lyons	276 Pacific Ave., Jersey City, N. J.
	DeBeque	Mt. Blaine Oil Shale Co.	DeBeque
Dry Fork	DeBeque	Oil Shale Mining Co.	DeBeque
	DeBeque	Overland Producing & Refining Co.	310 Boston Bldg., Denver
Clear Creek	DeBeque	Shale Oil Syndicate	DeBeque
	Grand Valley	W. S. Skinner	Los Angeles, California
	DeBeque	Standard Shale Products Co.	DeBeque
	DeBeque	Superior Shale Oil Co.	Des Moines, Iowa
	DeBeque	Herbert N. Wright	Worcester, Mass.
	Grand Valley	G. A. Taff	Exch Nat. Bk. Bldg., Colo. Sp'gs
	Grand Valley	Union Oil Co. of California	E. & C. Bldg., Denver
Ute Rock	Grand Valley	Ute Rock-John Cortellini	Leadville

OPERATING OIL SHALE PROPERTIES IN MESA COUNTY, 1922

Name	Location	Operator	P. O. Address
	DeBeque	American Mineral Oil Co.	Cooper Bldg., Denver
	DeBeque	L. E. Girard	Boulder
	Collbran	Pyramid Shale Co.	1750 Williams St., Denver

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING QUARRIES AND CLAY PITS, 1922

Location		Name	Product	Operator	P. O. Address
Town	County				
Lyons	Boulder	St. Vrain	Granite	E. G. Bird	354 So. Wash., Denver
	Boulder	St. Vrain Red Sandstone			609 Interstate Trust Bldg., Denver
Salida	Chaffee	Bonaccord	Sandstone	J. C. Brodie	6th and Curtis St., Denver
Salida	Chaffee	Black Diamond	Granite	Black Diamond Granite Co.	Salida
Salida	Chaffee	Bowers	Granite	Bowers Brothers	Salida
Monarch	Chaffee	Giant Eclipse	Granite	Colorado Granite Co.	Salida
Salida	Chaffee		Limestone	Tomlin and Beck	Garfield
Silver Plume	Clear Creek		Granite	Salida Granite Corporation	Salida
Westcliffe	Custer	Mica	Granite	Denver Marble & Granite Co.	1224 Lawrence St., Denver
Larkspur	Douglas	Ware	Mica	Mica Products Co.	429 Boston Bldg., Denver
Castle Rock	Douglas		Plastic Clay	W. S. Hawn	Larkspur
Manitou	El Paso	Manitou	Plastic Clay	E. L. Scott	Castle Rock
Manitou	El Paso		Limestone	Western Lime Company	305 Sugar Bldg., Denver
Salida	Fremont		Limestone	J. H. Harkins	Colorado Springs
Salida	Fremont		Granite	Rocky Mountain Granite Co.	Salida
Canon City	Fremont	Burnt	Granite	E. F. Bowen	Salida
Canon City	Fremont	Calcite	Granite	S. Vernon St. John	Canon City
Calcite	Fremont		Limestone	Colorado Fuel & Iron Co.	Boston Bldg., Denver
Concrete	Fremont		Limestone	Colorado Lime Corporation	232 Empire Bldg., Denver
Canon City	Fremont	Diamond	Limestone, Shale	U. S. Portland Cement Co.	305 Ideal Bldg., Denver
Canon City	Fremont	Dolomite	Fire Clay	Diamond Fire Brick Co.	Canon City
Texas Creek	Fremont	Echo	Dolomite	Roy Frankenberg	Canon City
Coaldale	Fremont	Gypsum	Granite	William Olson & Son	106 E. B St., Pueblo
Canon City	Fremont	Jewett	Limestone	T. A. Gilray	Coaldale
Salida	Fremont	McLaughlin	Fire Clay	Jewett Fire Brick Co.	Canon City
Howard	Fremont	Noon	Granite	Nan T. McLaughlin	1015 Osage St., Denver
Cotopaxi	Fremont		Granite	Colo. Marble & Stone Co.	Denver
Portland	Fremont		Granite	Peter Noon	Cotopaxi
Texas Creek	Fremont		Limestone, Shale	Colo. Portland Cement Co.	Denver
Canon City	Fremont	8 Mile	Granite	J. A. Lamb	Texas Creek
Marble	Gunnison	Carrara	Limestone	Gennaro Ricchuti	Canon City
Marble	Gunnison	Colorado Marble	Marble	Carrara Yule Marble Co.	Equitable Bldg., Denver
Marble	Gunnison	Yule	Marble	Colorado Marble Co.	Marble
Golden	Gunnison		Marble	Colorado White Marble Co.	Henwood Springs
Golden	Jefferson	Fire Clay	Plastic Clay	Yule Marble Co. of Colorado	Colo. Nat. Bank Bldg., Denver
Golden	Jefferson	Fire Clay	Fire Clay	Chris. Bennett	Golden
Golden	Jefferson		Fire Clay	Denver Sewer Pipe & Clay Co.	Denver
Golden	Jefferson		Fire and Plastic Clay	Golden Fire Brick Co.	Golden
Golden	Jefferson		Fire Clay	Golden Clay Mining Co.	Golden
Golden	Jefferson	No. 10 Clay Pit	Plastic Clay	Grant Parfet	Golden
Golden	Jefferson	Queen City	Plastic Clay	Golden Fire Brick Co.	Golden
Golden	Jefferson	Rockwell	Plastic Clay	Denver Pressed Brick Co.	219 Temple Court Bldg., Denver
	Jefferson			Jefferson Clay & Inv. Co.	Golden

OPERATING MILLS* AND SMELTERS, 1922

Character of Plant	Town	Location	County	Operator	P. O. Address
Arsenic and Cadmium Refinery	Denver	Adams and Denver	Adams and Denver	American Smelting & Refining Co.	120 Broadway, N. Y. City
Ore Sampler	Idaho Springs	Clear Creek	Clear Creek	American Smelting & Refining Co.	Idaho Springs
Chemical Ore Reduction	Denver	Denver	Denver	American Continuous Refractory Co.	810 Cen. Sav. Bk. Bldg., Denver
Carrollite Reduction	Denver	Denver	Denver	National Rare Metals Co.	505 California Bldg., Denver
Cyanidation	Colorado Springs	El Paso	El Paso	Radium Company of Colorado	Radium Bldg., Denver
Zinc Oxide Mfg.	Canon City	Fremont	Fremont	Golden Cycle M. & R. Co.	Colorado Springs
Zinc Oxide Mfg.	Florence	Florence	Florence	Empire Zinc Company	Canon City
Lead Smelter	Leadville	Lake	Lake	River Smelting & Refining Co.	Florence
Zinc Oxide Mfg.	Leadville	Lake	Lake	American Smelting & Refining Co.	120 Broadway, N. Y. City
Lead Smelter	Durango	La Plata	La Plata	Western Zinc Oxide Co.	Delaware Block, Leadville
Zinc Oxide Mfg.	Pueblo	Pueblo	Pueblo	American Smelting & Refining Co.	120 Broadway, N. Y. City
Ore Sampler	Victor	Teller	Teller	United States Zinc Co.	120 Broadway, N. Y. City
Compressed Air Plant	Independence	Teller	Teller	Eagle Samplers, Inc.	Victor
				Teller County Air Co.	Cripple Creek

*Does not include mills operated in connection with individual mines which are included in the mine lists.

OPERATING PLACER MINES AND DREDGES, 1922

Name	Location		Operator	P. O. Address
	Town	County		
Black Bear Placer.....	Idaho Springs.....	Clear Creek.....	Clear Creek Placer Co.....	Idaho Springs
Pactolus Placer.....	Rollinsville.....	Gilpin.....	Pactolus Gold Dredging Co.....	402 Foster Bldg., Denver
Perigo Placer.....	Rollinsville.....	Gilpin.....	F. Messinger & Co.....	Rollinsville
Fairplay Dredge No. 1.....	Fairplay.....	Park.....	South Park Dredging Co.....	433 California St., San Francisco, Calif.
Bemrose Placer.....	Breckenridge.....	Summit.....	W. E. Terrell & Assoc.....	Breckenridge
Blue River Dredge.....	Breckenridge.....	Summit.....	Blue River Placer Mining Co.....	10 Independence Bldg., Colorado Springs
Florence.....	Breckenridge.....	Summit.....	Florence Gold Dredging Co.....	610 Mining Exchange Bldg., Denver
L. H. Fuller Placer.....	Breckenridge.....	Summit.....	Charles Sisler.....	Breckenridge
Tonopah Dredge No. 1.....	Breckenridge.....	Summit.....	Tonopah Placers Co.....	572 Bullitt Bldg., Philadelphia, Pa.

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E. J. Hoefnagels.
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